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Vol. 947 Number 2

OFFICIAL GAZETTE

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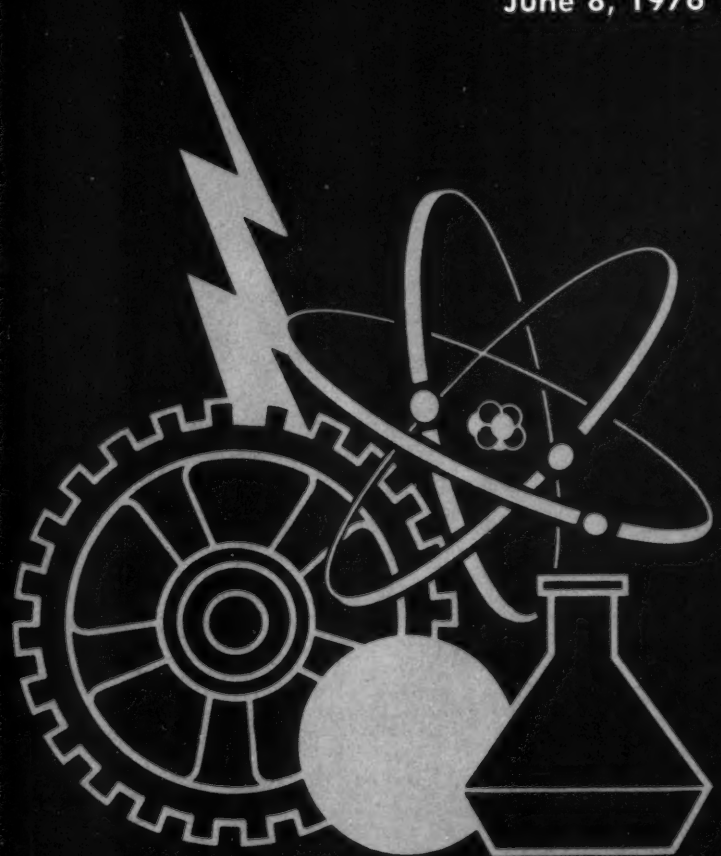

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

June 8, 1976 Volume 947 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Examination

Pursuant to the provisions of 37 C.F.R. 1.341(c), an examination for persons seeking registration before the United States Patent & Trademark Office as patent attorneys or agents will be held on Tuesday, September 7, 1976.

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent & Trademark Office in patent cases must, pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent & Trademark Office in trademark cases. Recognition for practice in trademark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

The examination will be given under the supervision of the Civil Service Commission, and may be taken in any of the cities in which the Civil Service Commission regularly conducts examinations. Applications to take the examination must be filed in the Patent & Trademark Office together with a $35 fee not later than July 31, 1976.

Application blanks may be obtained from the Clerk of the Patent & Trademark Office Committee on Enrollment, Bldg. 3, 11th Floor, Room C16, Crystal Plaza, Arlington, Va., or by mail addressed to the Commissioner of Patents & Trademarks, Washington, D.C. 20231, and directed to the attention of the Clerk of the Committee on Enrollment.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before July 9, 1976.

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Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,129,442, T. L. Leckie, STENCIL PRINTING OF THICK FABRICS; **3,140,028**, same, PRINTING OF THICK FABRICS AND STENCIL PRINTING APPARATUS, **filed** Aug. 21, 1973, D.C., N.D. Ga. (Atlanta) Doc. 18829, *Champion International Corporation* v. *Bradford Dyers' Association Limited.* Stipulation of dismissal with prejudice, Feb. 23, 1976.

3,140,028. (See 3,129,442.)

3,142,368, J. W. Roney, ELECTRICAL COLLECTOR ASSEMBLY; **3,249,704**, D. H. Scofield, ELECTRICAL CONDUCTOR BAR FOR TROLLEY ELECTRIFICATION SYSTEMS; **3,452,433**, same, METHOD OF MANUFACTURING ELECTRICAL CONDUCTOR BARS FOR TROLLEY ELECTRIFICATION SYSTEMS, **filed** Feb. 24, 1976, D.C., C.D. Calif. (Los Angeles) Doc. CV-76-0605-IH, *Duct-O-Wire Company* v. *Insul-8 Corporation.*

3,218,220, N. Weber, STRENGTHENED GLASS ARTICLE AND METHOD OF PRODUCING SAME, **filed** Feb. 18, 1976, D.C., W.D.N.Y. (Buffalo) Doc. C-7-68, *PPG Industries, Inc.* v. *Bausch & Lomb, Inc.*

3,249,704. (See 3,142,368.)

3,319,052, G. Arshal, DIRECTIONAL COMPUTER, **filed** Dec. 12, 1975, United States Court of Claims (District of Columbia) Doc. 431-75, *George Arshal* v. *The United States.*

3,325,573, Boon and Hager, MANUFACTURE OF FOAM MATERIAL, **filed** Mar. 28, 1973, D.C. Md. (Baltimore) Doc. 73-279-N, *Reeves Brothers, Inc.* v. *Wm. T. Burnett & Company, Inc.* Stipulated order of dismissal pursuant to Rule 41(a)(1)(ii), F.R.C.P., Feb. 27, 1976.

3,394,498, Reinitz and Scott, TRAFFIC CONTROL DEVICES, **filed** Mar. 7, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c754, *Saftran Systems Corporation* v. *National Electric Control Co. et al.* Order, the above cause of action is hereby stricken from this court's call without prejudice and with leave to reinstate upon motion, Oct. 3, 1975.

3,396,342, A. E. Feinberg, POWER SUPPLY CIRCUIT FOR CONTINUOUS WAVE MAGNETRON OPERATED BY PULSED DIRECT CURRENT, **filed** Feb. 17, 1976, D.C., N.D. Ill. (Chicago) Doc. 76c553, *Advance Transformer Co.* v. *Wieboldt Stores, Inc.*

3,415,129, R. D. Stamm, DUAL BAND PUSHBUTTON TUNER; **3,463,017**, Stamm and Smart, same, **filed** Feb. 27, 1976, D.C. Del. (Wilmington) Doc. 7-97, *General Instrument Corporation* v. *Lear Jet Stereo, Inc.*

3,452,433. (See 3,142,368.)

3,463,017. (See 3,415,129.)

3,674,061, Calisher and Burbick, LIQUID TRANSFER APPARATUS WITH PRESSURE-SENSITIVE AUTOMATIC SHUT-OFF NOZZLE, **filed** Feb. 26, 1976, D.C.N.J. (Trenton) Doc. C-76-351, *DeLaval Turbine, Inc.* v. *Aeroquip Corporation.*

3,724,789, S. L. Snyder, RAM AIR GLIDE PARACHUTE, **filed** Jan. 21, 1976, D.C., N.D. Calif. (San Francisco), Doc. C-76-149, *Lucasey Manufacturing Co., Inc.* v. *Peerless Sales Co.*

3,737,135, W. A. Bertolini, LOCKING DEVICE; **3,767,255**, same, CHASSIS WITH LOCKING DEVICE, **filed** Feb. 5, 1974, D.C.N.J. (Newark) Doc. C-74-162, *Bertolini Engineering Co., Inc.* v. *Zim-Israel Navigation Co., Ltd.* Order of dismissal of action, Mar. 2, 1976.

3,767,255. (See 3,737,135.)

3,785,569, R. Helmrich, AEROSOL GRENADE, **filed** Feb. 11, 1976, D.C.N.J. (Newark) Doc. 76–265, *Diamond Aerosol Corporation* v. *Security Laboratories, Inc. et al.*

3,852,846, L. E. Slaybaugh, DOOR HOLD OPEN ATTACHMENT FOR A DOOR CHECK, **filed** Feb. 26, 1976, D.C., S.D. Ill. (Peoria) Doc. P–C–76–0017, *Republic Industries, Inc.* v. *Schlage Lock Company.*

3,887,768, Forney, Jr. and Gallager, SIGNAL STRUCTURES FOR DOUBLE SIDE BAND-QUADRATURE CARRIER MODULATION, **filed** Feb. 27, 1976, D.C. Fla. (Miami) Doc. 75–435–C–CF, *Codex Corporation* v. *Milgo Electronic Corporation.*

D. 215,259, M. J. Syverson, BEVERAGE DISPENSER, **filed** Feb. 20, 1976, D.C., N.D. Iowa (Cedar Rapids) Doc. C76–2004, *Fountain Industries, Inc.* v. *Professional Office Services, Inc. and Lester Purtee.*

PATENT NOTICES

Certificates of Correction for the Week of June 8, 1976

Re. 28,528	3,897,782	3,931,294	3,942,993
Re. 28,579	3,898,312	3,931,327	3,943,403
Re. 28,749	3,898,715	3,931,977	3,943,472
D. 238,732	3,900,578	3,932,332	3,943,892
D. 238,733	3,901,062	3,932,554	3,943,898
D. 238,734	3,903,183	3,932,781	3,943,988
D. 239,175	3,904,793	3,933,561	3,943,998
3,699,944	3,906,801	3,934,067	3,944,249
3,729,688	3,907,273	3,934,111	3,944,402
3,766,058	3,907,779	3,934,222	3,944,457
3,769,426	3,909,183	3,934,438	3,944,674
3,771,925	3,909,285	3,934,563	3,944,684
3,778,861	3,909,308	3,934,911	3,944,796
3,783,260	3,910,965	3,934,984	3,945,088
3,785,833	3,911,400	3,935,091	3,945,245
3,794,869	3,912,430	3,935,221	3,945,493
3,812,170	3,912,443	3,935,480	3,945,547
3,814,570	3,912,665	3,935,728	3,945,741
3,816,307	3,913,343	3,936,153	3,945,945
3,816,458	3,913,752	3,936,169	3,946,105
3,816,463	3,914,828	3,936,400	3,946,254
3,821,291	3,915,375	3,936,597	3,946,285
3,831,652	3,915,540	3,937,116	3,946,311
3,836,577	3,916,320	3,937,204	3,946,346
3,838,066	3,916,509	3,937,765	3,946,438
3,842,048	3,917,597	3,937,964	3,946,494
3,844,991	3,918,174	3,938,371	3,946,545
3,850,802	3,918,233	3,938,384	3,946,614
3,851,535	3,918,467	3,938,408	3,946,732
3,853,937	3,919,762	3,938,440	3,947,133
3,862,727	3,921,888	3,938,879	3,947,206
3,866,049	3,923,186	3,938,987	3,947,275
3,869,538	3,924,366	3,939,247	3,947,319
3,873,320	3,924,452	3,939,512	3,947,339
3,874,649	3,924,897	3,939,527	3,947,431
3,874,916	3,924,963	3,939,536	3,947,443
3,879,260	3,925,019	3,939,545	3,947,454
3,879,560	3,925,373	3,939,568	3,947,478
3,879,678	3,925,515	3,939,626	3,947,642
3,880,995	3,926,804	3,939,719	3,947,647
3,881,802	3,926,873	3,940,226	3,947,681
3,886,820	3,926,896	3,940,594	3,947,742
3,887,703	3,927,401	3,940,778	3,947,773
3,888,655	3,927,664	3,941,648	3,947,872
3,888,855	3,927,673	3,941,674	3,947,959
3,893,177	3,928,730	3,941,739	3,948,192
3,893,575	3,929,108	3,941,816	3,948,563
3,896,087	3,929,383	3,941,866	3,949,101
3,897,434	3,929,681	3,941,986	3,949,272
3,897,481	3,930,239	3,942,718	3,949,976
3,897,561	3,930,981	3,942,988	

Dedication

3,788,788.—*Karl Hehl*, Lossburg, Wurttemberg, Germany. INJECTION MOLDING MACHINE. Patent dated Jan. 29, 1974. Dedication filed May 14, 1976, by the inventor.

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimers

3,198,048.—*Paul K. Davis*, Alameda, Calif. PIPE CUTTING AND HANDLING APPARATUS. Patent dated Aug. 3, 1965. Disclaimer filed Apr. 12, 1976, by the assignee, *Pacific Roller Die Co., Inc.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 of said patent.

3,257,881.—*Paul K. Davis*, Alameda, Calif. PIPE CUTTING AND HANDLING METHOD. Patent dated June 28, 1966. Disclaimer filed Apr. 12, 1976, by the assignee, *Pacific Roller Die Co., Inc.*

Hereby enters this disclaimer to claim 5 of said patent.

3,599,837.—*Douglas W. Anderson*, Palatine, Ill. PLASTIC DISPENSING CONTAINER AND CLOSURE THEREFOR. Patent dated Aug. 17, 1971. Disclaimer filed Mar. 31, 1976, by the assignee, *Dave Chapman, Design, Inc.*

Hereby enters this disclaimer to claims 5, 6 and 7 of said patent.

3,928,630.—*Fulvio Perini*, Palo Alto, Calif. ENZYMATIC PROCESSES FOR HYDROLYZING PROTEINS. Patent dated Dec. 23, 1975. Disclaimer filed Apr. 9, 1976, by the assignee, *Syntex (U.S.A.) Inc.*

Hereby enters this disclaimer to all claims of said patent.

National Technical Information Service

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The inventions listed below are owned by the U.S. Government and are available for U.S. licensing and possibly foreign licensing, in accordance with the licensing policies of the agency sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications, either paper copy (PC) or microfiche (MF), can be purchased at the prices cited from the National Technical Information Service (NTIS), Springfield, Va. 22161. Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator.

U.S. DEPARTMENT OF THE ARMY

Office of Judge Advocate General, Patent Division, Room 2C-455, Pentagon, Washington, D.C. 20310

Patent 3,879,997. Pressure Check Apparatus for Electrical Connector Contacts. Filed Jan. 29, 1974. Patented Apr. 29, 1975. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Research Agreements and Patent Mgmt. Branch, General Services Division, Federal Bldg., Agricultural Research Service, Hyattsville, Md. 20782

Patent 3,907,497. Catalysis With Odor Free Hydroxymethanesulfonic Acid in the Finishing of Cellulosic Textiles. Filed Oct. 10, 1973. Patented Sept. 23, 1975. Not available NTIS.

Patent 3,909,861. Aluminum Chlorhydroxide Catalyst Systems for Treatments to Give Wrinkle Resistant Textiles. Filed Oct. 5, 1973. Patented Oct. 7, 1975. Not available NTIS.

Patent 3,910,760. Azeotropic Solvents for Permanent Press Treatments of Cotton and Cotton Blend Fabrics. Filed May 14, 1973. Patented Oct. 7, 1975. Not available NTIS.

Patent 3,910,886. Organo-Phosphorus Compounds Containing Perfluoroalkyl Radicals and Aziridine Radicals. Filed June 9, 1971. Patented Oct. 7, 1975. Not available NTIS.

Patent 3,912,449. Process for Preparing Water Repellent Cotton Textiles and the Product. Filed Jan. 31, 1973. Patented Oct. 14, 1975. Not available NTIS.

Patent 3,914,109. Cotton-Oxime, Cotton-Semicarbazone, and Cotton-Hydantoin-Textile Products of High Nitrogen Content. Filed Apr. 6, 1973. Patented Oct. 21, 1975. Not available NTIS.

Patent 3,915,631. Processes to Make Olive Drab to Greenish-Gold Mineral Dye Shades for Cellulosics. Filed June 28, 1973. Patented Oct. 28, 1975. Not available NTIS.

Patent 3,915,915. Flame Proofing Textile Treating Composition of Tris(Hydroxymethyl) Phosphine-Urea Adduct and Polyvinylbromide. Filed June 28, 1972. Patented Oct. 28, 1975. Not available NTIS.

Patent 3,917,446. Single Bath Fungicidal Chrome-Zirconyl Acetate Mineral Dyeing Process for Cellulosics. Filed Mar. 22, 1974. Patented Nov. 4, 1975. Not available NTIS.

Patent 3,917,638. 1,3-Diacyl Derivatives of Imidazolidine. Filed Mar. 4, 1974. Patented Nov. 4, 1975. Not available NTIS.

Patent 3,918,899. Carboxymethyl (CM) Cottons Prepared in Non-Aqueous Media. Filed Aug. 16, 1974. Patented Nov. 11, 1975. Not available NTIS.

Patent 3,918,903. Dehydration Process to Impart Wrinkle Resistance to Cellulose-Containing Fibrous Materials. Filed July 25, 1972. Patented Nov. 11, 1975. Not available NTIS.

Patent 3,919,439. Method of Application of THPOH-NH3 Fire Retardant Finish to Textiles. Filed May 10, 1974. Patented Nov. 11, 1975. Not available NTIS.

Patent 3,926,550. Cotton-Tung Oil Durable-Press Textiles With High Flex Abrasion Resistance. Filed Nov. 26, 1974. Patented Dec. 16, 1975. Not available NTIS.

Patent 3,926,555. Modification of Cotton Textiles and Cotton/Polyester Textile Blends by Photo-Initiated Polymerization of Vinylic Monomers. Filed Mar. 16, 1973. Patented Dec. 16, 1975. Not available NTIS.

Patent 3,929,535. Color Reversible, Mirror Surface Glassy Materials From Plumbite-Treated Cellulosics. Filed Aug. 22, 1974. Patented Dec. 30, 1975. Not available NTIS.

Patent 3,929,634. Removal of Mercury From Aqueous Solutions Employing Naval Stores Products. Filed Aug. 16, 1974. Patented Dec. 30, 1975. Not available NTIS.

Patent 3,932,123. Flameproofing of Cotton Cellulose With Hexamethyl Phosphorous Triamide. Filed Mar. 16, 1973. Patented June 13, 1976. Not available NTIS.

Patent 3,932,560. High-Molecular Weight Acidic Polymers. Filed Aug. 28, 1974. Patented Jan. 13, 1976. Not available NTIS.

Patent 3,933,944. Bis(Phosphono)Dicarboxylic Acid Derivatives. Filed Dec. 4, 1972. Patented Jan. 20, 1976. Not available NTIS.

Patent 3,934,971. Process for Preparing Multicolored Cotton Pile Fabric. Filed June 4, 1974. Patented Jan. 27, 1976. Not available NTIS.

Patent 3,936,580. Electrically Conductive Glasslike Films on Glass or Ceramic Surfaces From Aluminum and Plumbite-Treated Cellulosics. Filed Aug. 22, 1974. Patented Feb. 3, 1976. Not available NTIS.

U.S. DEPARTMENT OF COMMERCE
Assistant General Counsel for Administration
Washington, D.C. 20230

Patent application 663,401. High Speed, Wide Dynamic Range Analog-to-Digital Conversion. Filed Mar. 3, 1976. PC $3.50/MF $2.25.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Reseach
Code 302, Arlington, Va. 22217

Patent application 638,138. Homing Projectile. Filed Dec. 5, 1975. PC $3.50/MF $2.25.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

Patent application 641,784. Load Regulating Latch. Filed Dec. 18, 1975. PC $3.50/MF $2.25.

Patent 3,923,166. Remote Manipulator System. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,444. Ultrasonic Calibration Device. Patented Dec 9, 1975. Not available NTIS.

Patent 3,925,104. Thermocouple Tape. Patented Dec. 9, 1975. Not available NTIS.

Patent 3,926,482. Fluid Journal Bearings. Patented Dec. 16, 1975. Not available NTIS.

Patent 3,927,324. Micrometeoroid Velocity and Trajectory Analyzer. Patented Dec. 16, 1975. Not available NTIS.

U.S. DEPARTMENT OF THE ARMY
Office of Judge Advocate General, Patent Division, Room 2C–455, Pentagon, Washington, D.C. 20310

Patent 3,432,855. Moving Target Indicator. Filed Feb. 5, 1968. Patented Mar. 11, 1969. Not available NTIS.

Patent 3,642,580. Enzymatic Saccharification of Cellulose. Filed Jan. 8, 1970. Patented Feb. 15, 1972. Not available NTIS.

Patent 3,773,799. Diglycidyl Ether of 4-Methylol Resorcinol. Filed July 6, 1971. Patented Nov. 20, 1973. Not available NTIS.

Patent 3,855,004. Method of Producing Current With Ceramic Ferroelectric Device. Filed Nov. 1, 1973. Patented Dec. 17, 1974. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent application 623,529. Turbine Blade With Secondary Air Nozzles Cast Integral With the Turbine Blades. Filed Oct. 17, 1975. PC $3.50/MF $2.25.

Patent application 634,799. Composite Rocket Nozzle Structure. Filed Nov. 25, 1975. PC $3.50/MF $2.25.

Patent application 635,001. Mass Flowmeter Starting System. Filed Nov. 25, 1975. PC $3.50/MF $2.25.

Patent 3,924,406. Embedded Porous Element Rocket Motor. Filed May 3, 1973. Patented Dec. 9, 1975. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Mgmt. Branch, General Services Division, Federal Bldg., Agricultural Research Service, Hyattsville, Md. 20782

Patent 3,647,893. Process for the Preparation of Alkyl and Aryl Iodine. Filed Mar. 23, 1970. Patented Mar. 7, 1972. Not available NTIS.

Patent 3,652,682. Process for the Preparation of Alkyl, Perfluoroalkyl and Aryl Iodides. Filed Mar. 23, 1970. Patented Mar. 28, 1972. Not available NTIS.

Patent 3,784,114. Protein-Enriched Whey Fractions. Filed June 7, 1972. Patented Jan. 8, 1974. Not available NTIS.

Patent 3,809,772. Process for Preparing a Food Adjunct From Collagen. Filed Jan. 5, 1971. Patented May 7, 1974. Not available NTIS.

Patent 3,824,319. Arthropod Maturation Inhibition Employing Certain Epoxy Compounds. Filed Jan. 7, 1971. Patented July 16, 1974. Not available NTIS.

Patent 3,842,128. Arthropod Maturation Inhibitors. Filed Apr. 6, 1973. Patented Oct. 15, 1974. Not available NTIS.

Patent 3,846,451. Arthropod Maturation Inhibitors. Filed Apr. 6, 1973. Patented Nov. 5, 1974. Not available NTIS.

Patent 3,846,458. Arthropod Maturation Inhibitors. Filed Apr. 6, 1973. Patented Nov. 5, 1974. Not available NTIS.

Patent 3,852,472. Certain Ethers of Open Chain Terpenoids as Insect Control Agents. Filed May 23, 1973. Patented Dec. 3, 1974. Not available NTIS.

Patent 3,930,037. Process for Preparing Mixtures of Carotenoid Pigments. Filed Oct. 9, 1974. Patented Dec. 30, 1975. Not available NTIS.

Patent 3,930,038. Method for Coloring Fruits and Vegetables. Filed Oct. 9, 1974. Patented Dec. 30, 1975. Not available NTIS.

Patent 3,934,046. Water Leaching Pre-Fried Potato Slices. Filed Apr. 6, 1973. Patented Jan. 20, 1976. Not available NTIS.

U.S. DEPARTMENT OF TRANSPORTATION
Patent Counsel, 400 7th St., SW.,
Washington, D.C. 20590

Patent 3,758,775. Railroad Crossing Signalling System. Filed Sept. 29, 1971. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,880,610. Universal Function Module. Filed Dec. 14, 1973. Patented Apr. 29, 1975. Not available NTIS.

Patent 3,899,213. Airborne Laser Remote Sensing System for the Detection and Identification of Oil Spills. Filed Mar. 8, 1974. Patented Aug. 12, 1975. Not available NTIS.

Patent 3,905,012. Dynamic Railroad Freight Car Monitoring System. Filed Aug. 2, 1974. Patented Sept. 9, 1975. Not available NTIS.

Patent 3,911,389. Magnetic Gradient Vehicle Detector. Filed Mar. 21, 1974. Patented Oct. 7, 1975. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch,
Westwood Bldg., Bethesda, Md. 20014

Patent 3,925,547. Isolation and Purification of Active Principle of Fruit of Synsepalum Dulcificum. Filed Apr. 24, 1973. Patented Dec. 9, 1975. Not available NTIS.

Patent 3,928,584. Extracts From Active Tree Saps for Treating P388 Mouse Leukemia. Filed Apr. 5, 1972. Patented Dec. 23, 1975. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Reseach
Code 302, Arlington, Va. 22217

Patent application 588,450. Hydraulic Fluidic Level Control System. Filed June 19, 1975. PC $3.50/MF $2.25.

Patent application 610,207. Method and Apparatus for Direct Radon Measurement. Filed Sept. 4, 1975. PC $3.50/MF $2.25.

Patent application 625,449. Fuse. Filed Oct. 24, 1975. PC $3.50/MF $2.25.

Patent application 628,631. Digital Mean Clutter Doppler Compensation System. Filed Nov. 4, 1975. PC $3.50/MF $2.25.

Patent application 648,557. Steerable Extraction Rocket. Filed Jan. 12, 1976. PC $3.50/MF $2.25.

Patent 3,585,114. Tin Plating Bath Having Organic Compound. Filed May 14, 1969. Patented June 15, 1971. Not available NTIS.

Patent 3,830,663. Battery Holder for Satellite and Method. Filed Mar. 5, 1973. Patented Aug. 20, 1974. Not available NTIS.

Patent 3,830,674. Propellant Composition Containing Beryllium and an Energetic Difluoramino Containing Binder. Filed Apr. 29, 1969. Patented Aug. 20, 1974. Not available NTIS.

Patent 3,836,951. Heterodyne Autocorrelation Guidance System. Filed May 5, 1960. Patented Sept. 17, 1974. Not available NTIS.

Patent 3,838,422. Radar Adaptive Video Processor. Filed Sept. 20, 1973. Patented Sept. 24, 1974. Not available NTIS.

Patent 3,839,720. Corporate Feed System for Cylindrical Antenna Array. Filed June 25, 1973. Patented Oct. 1, 1974. Not available NTIS.

Patent 3,840,797. Related Power Supply. Filed Dec. 28, 1970. Patented Oct. 8, 1974. Not available NTIS.

Patent 3,842,841. Constant Current Power Pack for Bone Healing and Method of Use. Filed Oct. 29, 1971. Patented Oct. 22, 1974. Not available NTIS.

Patent 3,851,300. Transducer. Filed Nov. 3, 1971. Patented Nov. 26, 1974. Not available NTIS.

Patent 3,851,586. Temperature Compensated Pyrotechnic Delays. Filed May 15, 1973. Patented Dec. 3, 1974. Not available NTIS.

Patent 3,893,042. Lock Indicator for Phase-Locked Loops. Filed Dec. 12, 1973. Patented July 1, 1975. Not available NTIS.

Patent 3,893,061. Underwater Acoustic Detection System. Filed May 13, 1970. Patented July 1, 1975. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters—NASA Code GP–2, Washington, D.C. 20546

Patent application 634,214. Control for Nuclear Thermionic Power Source. Filed Oct. 17, 1975. PC $3.50/MF $2.25.

Patent application 640,806. Ceramic Fiber Insulating Material and Methods of Producing Same. Filed Dec. 15, 1975. PC $4.00/MF $2.25.

Patent application 641,802. Improved Accumulator. Filed Dec. 18, 1975. PC $3.50/MF $2.25.

Patent application 641,862. High Visibility Air Sea Rescue Panel. Filed Dec. 17, 1975. PC $3.50/MF $2.25.

Patent application 643,041. Selective Coating for Solar Panels. Filed Dec. 22, 1975. PC $3.50/MF $2.25.

Patent application 643,897. Method and Apparatus for Splitting a Beam of Energy. Filed Dec. 23, 1975. PC $4.00/MF $2.25.

Patent 3,916,060. Fiber Modified Polyurethane Foam for Ballistic Protection. Patented Oct. 28, 1975. Not available NTIS.

Patent 3,916,187. Cosmic Dust Analyzer. Patented Oct. 28, 1975. Not available NTIS.

Patent 3,922,930. Remotely Operable Articulated Manipulator. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,137. Deuterium Pass Through Target. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,164. High Temperature Beryllium Oxide Capacitor. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,200. Atomic Standard With Variable Storage Volume. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,237. Horn Antenna Having V-Shaped Corrugated Slots. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,239. Dichroic Plate. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,925,312. Polyimides of Ether-Linked Aryl Tetracarboxylic Dianhydrides. Patented Dec. 9, 1975. Not available NTIS.

Patent 3,926,567. Cermet Composition and Method of Fabrication. Patented Dec. 16, 1975. Not available NTIS.

Patent 3,927,227. Method for Manufacturing Mirrors in Zero Gravity Environment. Patented Dec. 16, 1975. Not available NTIS.

Patent 3,927,408. Single Frequency, Two Feed Dish Antenna Having Switchable Beamwidth. Patented Dec. 16, 1975. Not available NTIS.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 8, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds: Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-2-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur: Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-31-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-7-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products: Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions: Bleaching; Dyeing and Photography.	6-2-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-21-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization: General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures: Illumination: Horology; Acoustics; Recorders; Weighing Scales.	4-1-75
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-23-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-22-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Tesing; Indicating.	11-7-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics: Radiant Energy; Measuring.	6-16-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-10-75
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists: Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	6-5-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-6-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco: Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-16-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants: Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches: Power Transmission; Fluid Handling and Control; Lubrication.	5-15-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware: Locks; Building Structures: Closure Operators; Bridges; Closures: Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	10-2-75

Expiration of patents: The patents within the range of numbers indicated below expire during May 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,884,634 to 2,588,678 inclusive
Plant Patents..... Numbers 1,829 to 1,837 inclusive

REISSUES

JUNE 8, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

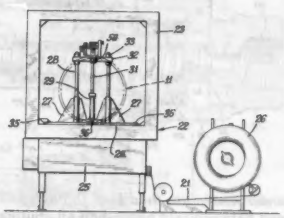
Re. 28,838
WHEEL RIM STRIP ASSEMBLY

Eugene von Heitlinger, Chicago, Ill., assignor to Signode Corporation, Glenview, Ill.

Original No. 3,840,956, dated Oct. 15, 1974, Ser. No. 439,383, Feb. 4, 1974. Application for reissue July 7, 1975, Ser. No. 593,561

Int. Cl.² B23P *23/04*; **B21K** *1/34*

U.S. Cl. 29—33.5 **7 Claims**



1. Apparatus for mounting a nylon strip around the periphery of the rim of a spoked wheel having a valve stem hole therethrough and spokes with their outer ends secured to said rim by nipples extending therethrough, *comprising strapping means*, wheel support means including locator means cooperating with said valve stem hole to properly position said wheel thereon when in a loading position, manually operable control means for initiating movement of said support means to an operative position relative to said strapping means, switch means automatically operable to stop movement of said support means in said operative position and to initiate cyclic actuation of said strapping means to wrap a nylon strip peripherally around said rim, tension, cut and secure the ends of said strip together, and piercing means operable in response to completion of said cyclic actuation of said strapping means to cut an aperture in said strip coinciding with said valve stem hole and to initiate movement of said support means to return said wheel to loading position.

7. Apparatus for mounting a nylon strip around the periphery of the rim of a spoked wheel having a valve stem hole therethrough and spokes with their outer ends secured to said rim by nipples extending therethrough, comprising strapping means, wheel support means including locator means cooperating with said valve stem hole to properly position said wheel thereon, means for initiating cyclic actuation of said strapping means to wrap a nylon strip peripherally around said rim, tension, cut and secure the ends of said strip together, and piercing means operable in response to completion of said cyclic actuation of said strapping means to cut an aperture in said strip coinciding with said valve stem hole.

Re. 28,839
MARINE SPEEDOMETER

Ronald R. Overs, 96 Fox Hunt Lane, East Amherst, N.Y 14051

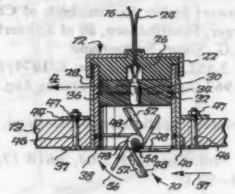
Original No. 3,706,224, dated Nov. 14, 1972, Ser. No. 112,268, Feb. 3, 1971. Application for reissue Feb. 11, 1974, Ser. No. 441,270

Int. Cl.² G01C *21/10*

U.S. Cl. 73—187 **9 Claims**

2. A marine speed indicator, comprising;

a substantially cylindrical tubular housing, one end of which is open and the other end of which is closed by a member having a substantially planar surface facing said open end with a hollow gap therebetween, said housing having a longitudinal axis, an impeller supported by said housing intermediate said ends thereof and mounted for rotation about an axis that is substantially perpendicular to said longitudinal axis and spaced from the walls of said housing



and said planar surface, said impeller comprising a plurality of vanes, at least one of which contains and supports a magnet for rotation therewith, and means responsive to movement of said magnet for generating a signal which is proportional to rotational movement of said impeller.

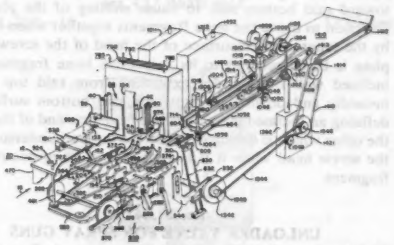
Re. 28,840
FEED, TRANSPORT AND DELIVERY MECHANISM FOR BOOK TRIMMERS AND THE LIKE

Ernest J. Sarring, Mundelein, Ill., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Original No. 3,722,336, dated Mar. 27, 1973, Ser. No. 114,225, Feb. 10, 1971. Application for reissue Mar. 20, 1975, Ser. No. 560,063

Int. Cl.² B26D *7/24*

U.S. Cl. 83—63 **8 Claims**



1. A trimmer for trimming edges of books comprising a hopper for holding a stack of books to be trimmed, means for moving the books from beneath the stack to said trimmer, said hopper comprising a front and a rear wall facing, respectively, toward and away from the direction from which comes the means for moving the books, a table surface beneath said walls on which the stack of books is seated, said walls defining a location for the stack of books, said rear wall being at a first location, stripper gate means at said first location and having a lower edge, said gate means being adjustable in height with respect to said table surface, whereby said gate lower edge is height adjustable for different height books to be moved away from said hopper, a switch connected with said moving means for activating and deactivating it, said gage being operable upon being contacted by a book of greater height than the height of said gate lower edge, which book is being moved by

said moving means, said gate being operable to operate said switch which thereby deactivates said moving means, said trimmer comprising knives for trimming the book edges and transport means for transporting the books to and past said knives, said trimmer being positioned to receive books delivered by said moving means, and said switch also being connected with said trimmer knives and said transport means such that operation of said switch deactivates these items and the entire trimmer.

Re. 28,841

OSTEOSYNTHETIC PRESSURE PLATE CONSTRUCTION

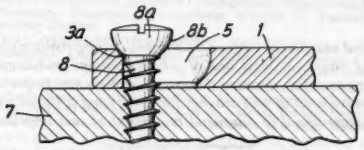
Martin Allgower; Stefan Perren, both of Chur, and Max E. Russenberger, Schaffhausen, all of Switzerland, assignors to Synthes A.G., Chur, Switzerland

Original No. 3,552,389, dated Jan. 5, 1971, Ser. No. 646,542, June 16, 1967. Application for reissue Aug. 3, 1972, Ser. No. 277,816

Claims priority, application Switzerland, June 22, 1966, 9068/66

Int. Cl.[2] A61F *5/04*; **A61B** *17/18*

U.S. Cl. 128—92 D **15 Claims**



1. An apparatus for securing bone fragments together in pressure contact using screws at least one of which has a head with an inwardly tapered undersurface, comprising a plate having a top side and a bootom side and at least two spaced [longitudinally elongated] slot openings extending therethrough for receiving the screws which are adapted to pass through the slot openings to engage into respective bone fragments, *at least one of said openings being longitudinally elongated, and* said plate having a wall bounding at least one of said openings which is inclined at an angle *to* said top side toward said bottom side to cause shifting of the plate in a direction to move the bone fragments together when engaged by the tapered undersurface of the head of the screw as said plate is being secured to its respective bone fragment, said inclined wall of said slot extending from said top surface inwardly and downwardly towards said bottom surface and defining an inclined planar surface from one end of the slot to the other which is displaceable by the tapered undersurface of the screw head when it is advanced into its respective bone fragment.

Re. 28,842

UNLOADER VALVE FOR SPRAY GUNS

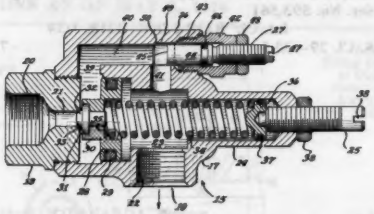
Ted Lee Butterfield, Naperville, Ill., assignor to Spraying Systems Co., Wheaton, Ill.

Original No. 3,729,018, dated Apr. 24, 1973, Ser. No. 160,014, July 6, 1971. Continuation-in-part of Ser. No. 55,319, July 6, 1970, Abandoned, which is a Continuation of Ser. No. 797,196, Feb. 6, 1969, abandoned. Application for reissue July 18, 1974, Ser. No. 489,589

Int. Cl.[2] F16K *17/04*

U.S. Cl. 137—470 **9 Claims**

1. An unloader valve defined by a hollow valve body having an inlet and an outlet leading to an interior working space in the body, a pressure operated piston movably mounted in the interior space of said body *thereby subdividing said interior space into spaces on the opposite sides of said piston*, said valve body having a valve seat of smaller cross-sectional area than said piston and formed around said inlet [passage], said piston including a reduced portion adapted to engage said seat to close off flow through said body, said valve body including *a fluid* passage [means] *defined in said valve body* communicating the space between said seat and said piston, when said piston is away from said seat, with an outlet from said body, *said fluid passage being the sole source of fluid communication between said inlet and said outlet, said passage being in communication with a lower face of said piston at one end and an upper face of said piston and said outlet at another end*, adjustable means *disposed in said passage between said lower face of said piston and said upper face of said piston* for varying the flow area through said passage [means] *thereby providing variable control of the fluid pressures exerted on said faces of said*



piston under maximum fluid flow through said body, a spring positioned between said piston and an abutment in said valve body to exert closing forces on said piston, and means for adjusting the spring pressure to adjust the closing forces exerted by said spring on said piston to thereby vary the pressure force in said inlet [passage] necessary to move said piston away from said seat, the entire cross-sectional area of said piston being subjected to the pressure in said space when said piston is away from said seat to thereby hold the piston away fr0m said seat as long as the total force due to pressure in said space exceeds the closing forces of said spring.

Re. 28,843

TEXTURED POLYETHYLENE TEREPHTHALATE YARNS

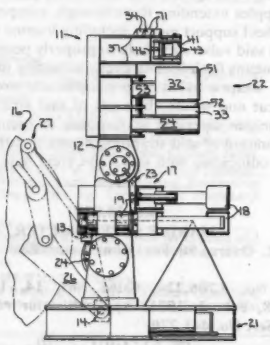
Michel Buzano, Villeurbanne, France, assignor to Rhone-Poulenc-Textile, S.A., Paris, France

Original No. 3,680,301, dated Aug. 1, 1972, Ser. No. 74,914, Sept. 23, 1970. Division of Ser. No. 799,794, Feb. 17, 1969, abandoned. Application for reissue Aug. 1, 1974, Ser. No. 493,825

Claims priority, application France, Feb. 19, 1968, 68.140387

Int. Cl.[2] D02G *3/34, 3/24, 1/00*

U.S. Cl. 57—140 J **2 Claims**



1. Textile articles comprising multi-filament polyethylene terephthalate yarns, in which each filament consists of alternating zones whose diameter progressively increases and decreases respectively between at least two different mean values, the parts of lowest diameter having the highest crystallin-

ity index and molecular orientation, the crystallinity index in the thinner parts of the filaments being between 15 and 60 percent and that in the thicker parts being between 5 and 25 percent but always lower than that in the thinner parts, each filament having a non-spiral three-dimensional structure and a high apparent volume.

Re. 28,844

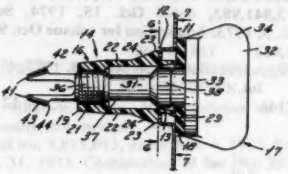
VALVE ASSEMBLY

David C. Dehar, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Original No. 3,811,650, dated May 21, 1974, Ser. No. 347,964, Apr. 4, 1973. Application for reissue Feb. 14. 1975, Ser. No. 550,241

Int. Cl.² B65D *41/04*

U.S. Cl. 251—144 **12 Claims**



1. A valve assembly for a liquid container comprising:
an insert member received within an opening formed in a wall of the container and
a plug member received within said insert member and
seal means positioned between a portion of said plug member and a portion of the wall about said opening,
said insert member including
a portion having a cross sectional shape which cooperates with the shape of said opening to prevent rotation of said insert relative to said opening,
a threaded portion having an axis extending generally perpendicular to said wall portion,
first abutment means engageable with the inner surfaces of said wall adjacent said opening,
said plug member including
a stem portion received within said insert member and having a threaded portion engageable with the threaded portion of said insert,
a head portion of dimensions greater than said opening,
said plug member being rotatable relative to said insert causing said threaded portions to displace said plug member axially relative to said insert member and to compress said seal means and said wall portion between said abutment means and said head portion.

Re. 28,845

HAND AND FINGER EXERCISER

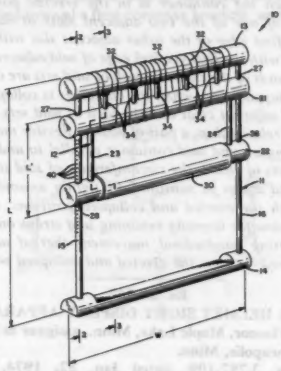
Harry L. Ratchford, 4177 Hubbartt Drive, Palo Alto, Calif. 94306

Original No. 3,570,849, dated Mar. 16, 1971, Ser. No. 844,818, July 25, 1969. Continuation of Ser. No. 244,969, Apr. 17, 1972, abandoned. Application for reissue Jan. 14, 1974, Ser. No. 432,891

Int. Cl.² A63B *11/08, 21/14, 23/00*

U.S. Cl. 272—68 **8 Claims**

1. A hand exerciser comprising
an outer frame having a pair of longitudinally spaced cross bars,
an inner frame supported on and within said outer frame for reciprocative movement in a common plane and having a pair of longitudinally spaced cross bars,
one of the cross bars of said inner frame having a rotatable finger grip thereon,
tensioning means coupling the other cross bar of the inner frame to the adjacent cross bar of the outer frame, and
a plurality of transversely spaced anchor means mounted on one of said coupled cross bars substantially across the width of the inner frame,



said tensioning means comprising
a rubber band for each of said anchor means, each of said bands being looped around the other of said coupled bars and having its opposite ends looped over the same anchor means.

Re. 28,846

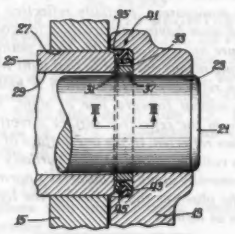
COLLAPSIBLE PALLET BOX

Hershey L. Walt, Lake Zurich, Ill., assignor to Rockaway Corporation, Rockaway, N.J.

Original No. 3,459,321, dated Aug. 5, 1969, Ser. No. 719,913, Apr. 9, 1968. Continuation of Ser. No. 163,511, July 16, 1971, abandoned. Application for reissue Mar. 14, 1974, Ser. No. 451,307

Int. Cl.² B65D *9/18*

U.S. Cl. 217—16 **13 Claims**



12. A collapsible pallet container comprising four side walls each formed of vertically extending slots, said side walls having inner and outer faces and first and second opposed vertical edges; the vertical edges of the adjacent side walls being in lapped relationship when the container is in the erected position with said first vertical edge of each side wall in end abutting relation with the inner face of an adjacent side wall adjacent the second vertical edge of said adjacent side wall, two sets of four aligned horizontal cleats secured to the outer faces of said side walls said cleats each having a length which is equal to the length of the side wall to which it is secured plus the approximate thickness of the side wall slats, one of said sets being positioned adjacent the top of said side wall and the other of said sets being positioned adjacent the bottom of said side walls with the end of one of the two adjacent cleats at each corner of said

container being aligned with the adjacent second vertical edge of the side wall to which said cleat is attached and with the end of the other adjacent cleat at said corner extending beyond the first vertical edge of the side wall to which said cleat is attached a distance approximately equal to the thickness of said slats, whereby, when the container is in the erected position, the second edge of one of the two adjacent slats at each corner overlaps the first edge of the other adjacent slat with its inner face engaged with the first vertical edge of said adjacent slat and the adjacent ends of the cleats in each of said sets are contiguous but non-overlapping and, when the container is collapsed, alternate pairs of adjacent cleat ends in each of said sets come into end abutting relationship, a pair of endless flexible metal straps, each extending around said container parallel to and overlying one of said sets of cleats, the circumference of said straps being such that said straps fit substantially tightly around said container in both the erected and collapsed positions, said cleats including means for laterally retaining said straps on the cleats while permitting longitudinal movement thereof as the container is moved between the erected and collapsed positions.

Re. 28,847

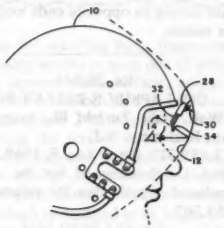
INSIDE HELMET SIGHT DISPLAY APPARATUS

Richard P. Vizenor, Maple Lake, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Original No. 3,787,109, dated Jan. 22, 1974, Ser. No. 266,995, June 28, 1972. Application for reissue Sept. 15, 1975, Ser. No. 613,593

Int. Cl.[2] G02B *5/08*

U.S. Cl. 350—302 **2 Claims**



9. A head-mounted display system comprising:

a. a partially transparent, partially reflective visor, one surface of said visor having a curvature for collimating light, the curvature having a definable focal point;

b. light emitting means position so that light travels from said means to a reflective surface which is located out of the observer's normal forward line of sight, the light being reflected from the reflective surface directly, and without being further reflected, to the one surface of the visor where the light is collimated and at least partially reflected to the observer generally along the observer's normal forward line of sight, the observer thus receiving the light as if it were originating at infinity.

Re. 28,848

BLASTING SLURRY COMPOSITIONS CONTAINING CALCIUM NITRATE AND METHOD OF PREPARATION

Robert B. Clay, Bountiful; Melvin A. Cook, and Lex L. Udy, both of Salt Lake City, all of Utah, assignors to Ireco Chemicals, Salt Lake City, Utah

Original No. 3,660,181, dated May 2, 1972, Ser. No. 821,095, May 1, 1969. Application for reissue Oct. 24, 1972, Ser. No. 300,323

Int. Cl.[2] C01B *1/04*; C06B *19/00*

U.S. Cl. 149—2 **10 Claims**

1. A pumpable and pourable aqueous slurry blasting composition of low water content and high sensitivity, comprising a liquid phase which includes a solution of powerful oxidizer salts selected from the group which consists of inorganic nitrates, chlorates and perchlorates and including at least 10% by weight, based on the total composition, of calcium nitrate, said liquid comprising water and ethylene glycol and including a viscosity-increasing agent in the liquid phase per se to impart thereto a viscosity sufficient to entrap and hold tiny bubbles of gas dispersed in said phase, a sufficient quantity of gas in the form of tiny bubbles being dispersed throughout said liquid phase to substantially enhance the sensitivity of the whole composition to detonation, and a storage stable, strongly cross-linked thickener or gel former selected from the group which consists of polysaccharide gums and starches in proportions sufficient to permanently hold said gas bubbles dispersed in situ and also to inhibit segregation of solid particles suspended in the liquid phase and inhibit intrusion of borehole water into said composition.

Re. 28,849

SURFACE PREPARATION PROCESS FOR RECOATING OF USED COATED METALLIC ELECTRODES

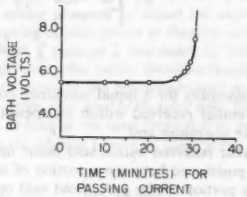
Reiichi Itai, and Hideo Kanai, both of Maebashi, Japan, assignors to The Japan Carlit Co., Ltd., Tokyo, Japan

Original No. 3,841,983, dated Oct. 15, 1974, Ser. No. 348,115, Apr. 5, 1973. Application for reissue Oct. 9, 1975, Ser. No. 621,021

Claims priority, application Japan, Aug. 28, 1972, 47-85281

Int. Cl.[2] C25F *5/00*, *3/00*

U.S. Cl. 204—146 **12 Claims**



1. A surface preparation process for recoating of a used coated metallic electrode coated with one or more platinum group [metals] *metal axides* or iron group metal oxides, comprising using said electrode as an anode and passing a current at about 1 to 100 A./dm.[2] of anode current density between said anode and steel cathodes, in an electrolytic bath containing an aqueous solution containing about 5 to 70 percent by weight of a salt selected from the group consisting of a sulfate, a nitrate, a perchlorate, a chlorate, a persulfate and a mixture thereof, at a temperature of about 0 to 50° C., for a period of time sufficient to effect removal of coating remaining on said used electrode.

Re. 28,850

PROCESS FOR PREPARING ALTERNATING COPOLYMER OF BUTADIENE AND α-OLEFINE AND NOVEL ALTERNATING COPOLYMER OF BUTADIENE AND α-OLEFINE CONTAINING CIS-CONFIGURATION BUTADIENE UNIT

Akihiro Kawasaki, and Isao Maruyama, both of Ichihara, Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

Original No. 3,766,153, dated Oct. 16, 1973, Ser. No. 278,416, Aug. 7, 1972. Division of Ser. No. 35,637, May 8, 1970, Pat. No. 3,714,133. Application for reissue July 9, 1975, Ser. No. 594,512

Claims priority, application Japan, May 13, 1969, 44-36161; July 16, 1969, 44-55768; July 24, 1969, 44-58030; Aug. 7, 1969, 44-62009; Dec. 12, 1969, 44-99375; Dec. 12, 1969, 44-99376

Int. Cl.[2] C08F *4/52*, *210/00*, *212/08*, *236/06*

U.S. Cl. 526—98 **9 Claims**

1. A process for preparing a 1:1 copolymer of butadiene and an alpha-olefin having alternating butadiene and alpha-olefin units, said alpha-olefin having the general formula of

CH_2=CHR′ wherein R′ represents a phenyl radical or a C_1 to C_4 normal or branched chain alkyl radical, which comprises contacting butadiene and the alpha-olefin in liquid phase at a temperature of from −100° C. to 50° C. with a catalyst system comprising a first component of an organoaluminum compound having the general formula of AlR_3 wherein R represents a hydrocarbon radical selected from the group consisting of an alkyl radical, an aryl radical and a cycloalkyl radical, a second component of titanium tetrahalide having the general formula TiX'_4 wherein X′ is selected from the group consisting of chlorine, bromine and iodine, and a third component of a carbonyl group-containing compound, wherein the molar ratio of said organoaluminum compound to said titanium tetrahalide is from greater than 1.5 to 20 and the molar ratio of butadiene to said alpha-olefin in the initial monomer composition is within a range of from 20:80 to 80:20.

Re. 28,851

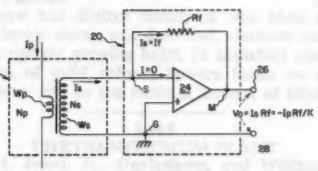
CURRENT TRANSFORMER WITH ACTIVE LOAD TERMINATION

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Original No. 3,815,013, dated June 4, 1974, Ser. No. 365,429, May 31, 1973. Continuation of Ser. No. 262,643, June 14, 1972, abandoned. Application for reissue Mar. 13, 1975, Ser. No. 558,094

Int. Cl.² G01R *19/00*

U.S. Cl. 323—6 **12 Claims**



1. In combination: a current transformer including primary and secondary windings adapted for conducting primary and secondary currents, respectively; and, a transresistance amplifier for terminating said secondary winding and serving as an active load which virtually short-circuits said secondary winding while supplying an output voltage proportional to the primary current, if any [.] *and, means coupled with said transresistance amplifier for supplying in response to said output voltage another output voltage phase-inverted with respect to said output voltage.*

Re. 28,852

TRAFFIC SIGNAL WITH DIRECTIONAL INDICATOR

Fred C. Sproul, Sr., 12227 Ranch House Road, San Diego, Calif. 92128

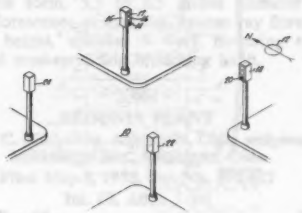
Original No. 3,740,716, dated June 19, 1973, Ser. No. 198,332, Nov. 12, 1971. Application for reissue Aug. 23 1974, Ser. No. 500,144

Int. Cl.² B60Q *1/00*

U.S. Cl. 340—107 **4 Claims**

1. Apparatus for displaying adjacent a roadway orientational information indicative of the compass heading direction in which a vehicle must be traveling if the vehicle operator can view the apparatus, in such a manner that motorists on said roadway must of necessity observe it, comprising:

a traffic signal comprised of at least three different-colored lenses and means of illuminating said lenses [selectively], said traffic signal installed with said lenses directed toward a first compass heading; and



means for permanently modifying the light beam transmitted by one of said lenses to convey information indicative of a second compass heading opposite said first compass heading to provide information as to the direction in which vehicles approaching the traffic signal are traveling.

Re. 28,853

SUPERCONDUCTIVE SHIFT REGISTER UTILIZING JOSEPHSON TUNNELLING DEVICES

Harvey C. Hamel; Charles A. Kunzinger, and William K. Stelzenmuller, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Original No. 3,825,906, dated July 23, 1974, Ser. No. 375,236, June 29, 1973. Application for reissue June 16, 1975, Ser. No. 587,458

Int. Cl.² G11C *11/44*

U.S. Cl. 340—173.1 **11 Claims**

1. A two-phase shift register using Josephson tunnelling devices comprising:

a plurality of shift register stages;

a current source for providing DC current to each of said shift register stages;

a first and second branch circuit in parallel in each of said shift register states;

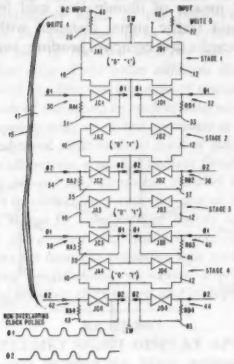
a first and second Josephson tunnelling device located in said first and second branch circuits, respectively, said devices operating in their no-voltage state;

a first and second input means for setting the associated Josephson junction to its finite voltage state causing the input current to flow in the opposite branch;

a first and second coupling means located between the first and second branches, respectively, of the stages of said shift register;

a source of phase time pulses, said first and second coupling means between successive stages being energized alternately by a current pulse at the opposite phase times; and

said first and second coupling means responding simultaneously to said phase time pulse and to the branch circuit



in which the current flows in the preceding stage thereby causing the current to flow in the opposite branch in the succeeding state.

Re. 28,854

FLOWER POT

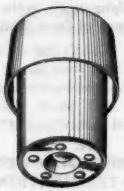
Rodney Dennis Bufton, by the Lucas Electrical Company Ltd., Birmingham, England, assignee

Original No. Des. 233,058, dated Oct. 1, 1974, Ser. No. 372,100, June 21, 1973. Application for reissue May 13, 1975, Ser. No. 577,084

Claims priority, application United Kingdom, Dec. 21, 1972

Term of patent 14 years

Int. Cl. D11–*02*



PLANT PATENTS

GRANTED JUNE 8, 1976

3,901
AZALEA PLANT

James W. Hines, Jr., Corona Del Mar, Calif., assignor to Hines Wholesale Nurseries, Santa Ana, Calif.

Filed Nov. 25, 1974, Ser. No. 526,617
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—56 1 Claim

1. A new and distinct variety of azalea plant which is a hybrid of the Belgian Indica strain and the Southern Indica strain, and characterized in particular to novelty by its ability to grow and flower in full sun or light shade in the southern California area without tip burning of the leaves or blasting of the flowers; by its moderately abundant and rich green foliage and compact habit of growth; by the unique eye-appealing coloring of its flowers; and by its greater salts tolerance, making it less subject to root diseases common to other varieties grown in the same general area of the Irvine Ranch in southern California.

3,902
ROSE PLANT SEEDLING 69—23R

Roy L. Byrum, Richmond, Ind., assignor to Joseph H. Hill Company, Richmond, Ind.

Filed Mar. 21, 1975, Ser. No. 560,693
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—28 1 Claim

1. A new and distinct variety of rose plant substantially as herein shown and described, characterized by its vigorous, upright growing habit, its abundant continuous production of solid colored flowers borne on straight, sturdy stems, and by the minimal amount of blind canes.

3,903
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William Erwin Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Apr. 25, 1975, Ser. No. 571,478
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct cultivar of chrysanthemum plant characterized particularly by the combined characteristics of daisy inflorescence form and semi-incurved inflorescence form, 5.5 to 6.5 inches diameter across face of inflorescence at maturity, bronze ray floret color, tall plant height, uniform 9 week flowering response period, and semi-spreading branching habit.

3,904
BEGONIA PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens Inc., Ashtabula, Ohio

Filed May 5, 1975, Ser. No. 574,627
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of begonia plant characterized particularly by the combined features of light rose red tepal color and ruffled and serrated tepal form and "flower-in-flower" form that provides added depth to the size of the bloom; propagation by leaf cuttings which produce vegetative adventitious shoots; vigorous, heavy stems thereby permitting upright plant growth; superior keeping quality in the home, and by its foliage which is is excellent in quality and immune to powdery mildew and resistant to *Xanthomonas begoniae*.

3,905
BEGONIA PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens Inc., Ashtabula, Ohio

Filed May 5, 1975, Ser. No. 574,628
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of begonia plant particularly characterized by the combined characteristics of relatively large flower size, double flower form and light pink flower color; ruffled tepals and "flower-in-flower" effect of individual flowers; propagation by leaf cuttings that develop vegetative adventitious shoots; vigorous stems that provide upright growth; excellent foliage which is resistant to powdery mildrew and by its excellent keeping qualities of tepals.

PLANT PATENTS

GRANTED JUNE 8, 1976

3,962
AZALEA PLANT

James W. Ellins, Jr., Corpus Christi, Calif., assignor to Three Waterside Nurseries, Aransas Pass, Calif.

Filed Nov. 24, 1975, Ser. No. 634,617

Int. Cl. A01h 5/00

U.S. Cl. PP—25 1 Claim

1. A new and distinct variety of azalea plant which is a hybrid of the Belgian Indica and the Southern Indica group and characterized in general by its ability to grow and flower well on high chalk in the southern California area without the loosing of the buds or blasting of the flowers by its moderately abundant and rich green foliage compact habit of growth, by the unique cup-opening coloring of its flowers and by its prolific and extensive rooting of its apical tip root division common to other varieties grown in the same general area of the Irvine Basin in southern California.

3,963
ROSE PLANT REDUCED 69—132

Roy L. Byers, Redmond, Ind., assignor to Joseph H. Hill Company, Richmond, Ind.

Filed May 31, 1975, Ser. No. 582,021

Int. Cl. A01h 5/00

U.S. Cl. PP—32 1 Claim

1. A new and distinct variety of rose plant substantially as shown and described, characterized by its vigorous, upright growing habit, its abundant continuous production of solid colored flowers borne on straight, sturdy stems, and by the minimal amount of blind canes.

3,964
CHRYSANTHEMUM PLANT

Walter E. Yonai, Jr., Doylestown, and William Erwin Decker, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 28, 1975, Ser. No. 609,079

Int. Cl. A01h 5/00

U.S. Cl. PP—14 1 Claim

1. A new and distinct variety of chrysanthemum plant characterized particularly by the combined chrysan-

PATENTS

GRANTED JUNE 8, 1976

ERRATA

For CLASS	See PATENT NO.
029-059	3,961,378
128-303 R	3,961,419
073-066	3,961,505
073-363	3,961,507
195-139	3,961,696
140-105	3,961,703
427-405	3,961,740
235-164	3,961,750
172-777	3,961,788
252-182	3,962,067
526-011.1	3,962,195
526-074	3,962,196
526-079	3,962,197
528-485	3,962,199
526-078	3,962,200
526-193	3,962,201
526-074	3,962,202
528-486	3,962,203
526-089	3,962,204
526-352	3,962,205
427-224	3,962,213
426-535	3,962,321
426-574	3,962,335
426-639	3,962,355
424-274	3,962,471
174-035 GC	3,962,550
174-074	3,962,554
235-132 R	3,962,568
248-340	3,962,575
240-026	3,962,675
240-081	3,962,678
340-172.5	3,962,706

PATENTS

GRANTED JUNE 8, 1976

ERRATA

PATENTS

GRANTED JUNE 8, 1976

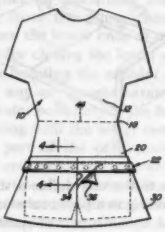
GENERAL AND MECHANICAL

3,961,376

DETACHABLE CONNECTION FOR COMBINATION SHORTS AND SKIRT

Evelyn M. Howell, 711 E. Jane St., Valdosta, Ga. 31601

Filed Mar. 6, 1975, Ser. No. 556,171
Int. Cl.² A41D *1/14*
U.S. Cl. 2—71 **3 Claims**



1. In combination with a body encircling garment including a waistline and a hip line disposed below the waistline as well as short legs extending downwardly below said hip line, said garment further including front and rear sides and vertical central rear side slide fastener means releasably connecting separable upper opposite side portions of said rear side, said slide fastener means extending downwardly to a point spaced sightly below said hip line and above said legs, a body band including opposite ends and extending at least substantially entirely about said garment and including upper and lower marginal edge portions, said upper marginal edge portion of said band being attached to the exterior of said garment along the hip line thereof with at least substantially the entire length of said band, extending about said garment, disposed below said upper marginal portion being free of attachment to said garment, the opposite end edge portions of said band being attached to said garment along and at opposite sides of the lower end of said slide fastener means, a body encircling skirt portion including upper and lower marginal portions, said upper marginal portion of said skirt portion being upwardly displaced beneath the lower marginal edge portion of said band between the latter and the opposing hip line of said garment, said skirt upper marginal portion and the hip line of said garment including coacting means removably attaching said skirt portion to said garment, said skirt portion comprising a horizontally elongated panel member having opposite ends, said panel member extending about the portion of said garment disposed below said hip line with the ends of said panel member disposed in at least closely adjacent relation and overlying the center of the front side of said garment, said panel member including a lower marginal portion projecting downwardly beyond the lower marginal portions of the short legs of said garment and an upper marginal edge portion having an upwardly opening notch formed therein centrally intermediate the opposite ends of said panel member, the width of said notch extending along said panel member, being greater than the spacing between said opposite end portions of said band attached to said garment, that portion of the panel member defining the bottom of said notch bridging and passing between and below, respectively, the opposite ends of said panel member and the upper marginal portions of said panel member defining the ends of said notch, spaced along said panel member, being received beneath the end portions of said band closely adjacent said end edge portions of said band secured to said garment.

3,961,377

GLOVE AND METHOD FOR THE PRODUCTION OF SAID GLOVE

Pehr Lars-Jos, Mobyn, 78200 Malung, Sweden

Filed Oct. 15, 1974, Ser. No. 515,028
Claims priority, application Sweden, Oct. 16, 1973, 7314030
Int. Cl.² A41D *19/02*
U.S. Cl. 2—169 **12 Claims**

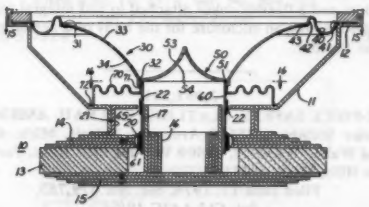
1. A protective glove, including a palmar hand portion having a palmar thumb portion, a dorsal hand rear portion and a dorsal thumb portion, finger stall portions connection to said palmar hand portion and said dorsal hand rear portion, respective palmar and dorsal finger stall sections of each finger stall portion comprised of one single piece of material, each said piece having two dorsally extending, opposite and longitudinal edges joined together along the mid-part of the dorsal finger stall portion, the shape of said dorsal finger stall section of each finger stall portion conforming to the curvature of the dorsally joined edges, and a protecting piece covering the palmar hand portion and at least the adjacent parts of the palmar side of each finger stall portion said protecting piece being connected to said palmar side.

3,961,378

CONE CONSTRUCTION FOR LOUDSPEAKER

Stanley F. White, 466 E. Vallette, Elmhurst, Ill. 60126

Division of Ser. No. 325,162, Jan. 19, 1973, Pat. No. 3,862,376. This application Nov. 11, 1974, Ser. No. 522,431
Int. Cl.² H04R *31/00*
U.S. Cl. 29—594 **2 Claims**



1. The method of making a loudspeaker cone assembly which comprises combining hollow spheres of glass of microscopic dimension with a mixture of an epoxy plastic and hardener in the liquid state to form a pastey emulsion free of voids, placing the emulsion in an open mold cavity, closing the mold

cavity to form the emulsion into the shape of a cone having a periphery and a central throat, applying heat to harden the cone, re-opening the mold cavity and removing the cone therefrom, affixing a flexible surround to the periphery and a flexible spider to the throat, and mounting a voice coil axially at the throat.

3,961,379

BIOIMPLANTABLE DEVICE FROM CROSSLINKED, SWOLLEN, HYDROPHILIC POLYMERS

Donald J. Highgate, "Brambles," Wonham Way, Gomshall, Guildford, Surrey, England

Filed July 17, 1974, Ser. No. 489,293

Claims priority, application United Kingdom, July 18, 1973, 34188/73

Int. Cl.² A61F *1/16*; **C08K** *5/07, 5/05*; **C08L** *31/02*

U.S. Cl. 3—13 **7 Claims**

1. A process for modifying properties of a swellable cross-linked solid polymer of at least one monomer selected from the group consisting of alkyl acrylates, alkyl methacrylates, hydroxy alkyl acrylates, hydroxy alkyl methacrylates and acrylamide comprising the steps of swelling an article of said cross-linked polymer in a mixture, in which said polymer is swellable, of at least one monomer selected from the group consisting of alkyl acrylates, alkyl methacrylates and N-vinyl-2-pyrrolidone and a cross-linking agent selected from the group consisting of allyl methacrylate and ethylene glycol dimethacrylate for the selected monomer and polymerising said mixture in the swollen polymer.

3,961,380

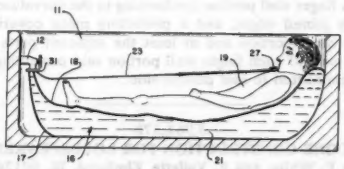
BATHTUB APPLIANCE WITH HOT WATER BLADDER AND HEAT CHAMBER

Ernest J. Garr, 3587 Powell Drive, Lafayette, Calif. 94549

Filed May 27, 1975, Ser. No. 580,953

Int. Cl.² A61H *33/12*

U.S. Cl. 4—160 **7 Claims**



1. In an appliance for use in a bathtub: a bladder fabricated of a flexible material adapted to rest in the lower portion of the bathtub and contain therein a body of water for supporting a person away from the walls of the tub in a sitting or reclining position, and a flexible cover attached to and integral with the bladder forming an enclosure for the body of a person resting on the bladder.

3,961,381

ONE-PIECE SAFETY, SLATLESS, BED RAIL ASSEMBLY

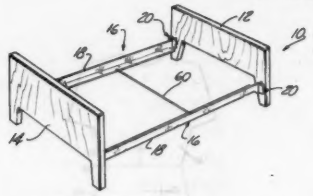
Maurice Weinhart, 18620 Ardmoor, Detroit, Mich. 48235, and Walter Weinhart, 29500 W. Nine Mile Road, Farmington Hills, Mich. 48024

Filed June 17, 1974, Ser. No. 479,753

Int. Cl.² A47C *19/04*

U.S. Cl. 5—296 **1 Claim**

1. A bed rail assembly comprising a pair of one piece rails; each of said rails comprising an elongated member having an upper vertical flange and a lower horizontal flange and a pair of connection fittings, one of said fittings disposed on each end of said member each connection fitting comprising a pair of outwardly and downwardly extending hooks, one of said hooks disposed under the other hook in a spaced relationship wherein both hooks are parallel to the plane of said vertical flange, and a vertical U-shaped channel having one edge along the base of said hooks wherein the side of said channel immediately adjacent said hooks is substantially perpendicular to the plane of the hooks, a pair of tabs wherein each of said tabs is integral with the last mentioned side of the U-shaped channel and is substantially perpendicular to the plane of the hooks, and wherein the tabs lie on one side of the plane of the hooks and the U-shaped channel lies in the other side of the



plane of the hooks to thereby define a shoulder on each side of said hooks extending in a plane substantially perpendicular to the plane of said hooks, a pair of apertures formed in each of said members in spaced relationship and a support member having end portions receivable in one of said apertures in each of said members whereby the distances between said rails can be adjusted depending upon which apertures in said rail are utilized.

3,961,382

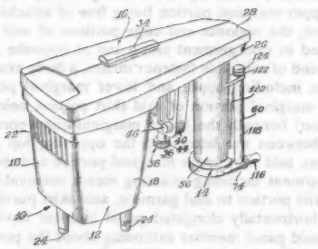
HYDROTHERAPY BATH ASSEMBLY

Samuel F. Peterson, Jr., Chicago, Ill., assignor to Associated Mills, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 420,225, Nov. 29, 1973, abandoned. This application Sept. 16, 1974, Ser. No. 506,317

Int. Cl.² A61H *9/00*

U.S. Cl. 4—178 **10 Claims**



1. In a portable hydrotherapy bath assembly wherein the bath assembly includes: an overhead support housing; a motor housing which has a motor positioned therein and which is connected with one end of the overhead support housing; a pump housing which has a pump drive shaft supported therein for rotation about its longitudinal axis and which is connected, at its one, upper end, with the other end of the overhead support housing so that the overhead support housing, the motor housing and the pump housing have a generally inverted U-shape and so that the overhead support housing may rest on the upper edge of a bath tub, with the motor housing being disposed without the bath tub and with the other, lower end of the pump housing being immersed in water in the bath tub; wherein the overhead housing including means for connecting the upper end of the pump drive shaft with the motor so that the motor may cause rotation of the pump drive shaft; and wherein a pump impeller is connected with the lower end of the pump drive shaft; the improvement comprising:

a unitary pump housing body including: a first, outer cylindrical wall having an upper end and a lower end; a second, inner cylindrical wall, which has an upper end and a lower end, which is concentric with and is spaced radially inwardly from the first outer cylindrical wall so as to define an annular chamber therebetween and which defines a central, cylindrical chamber that has the pump drive shaft disposed and supported therein for rotation; a pump chamber which is adjacent to the lower ends of the first and second cylindrical walls, which has the pump impeller disposed therein and which has a water inlet for permitting the ingress of water into the pump chamber and a water outlet for permitting the egress of water, under pressure, from the pump chamber; wall means extending between the lower ends of the first and second cylindrical walls for closing the lower end of the annular chamber and for isolating the annular chamber from the pump chamber; and an upright aerator tube positioned adjacent to the outer periphery of the first cylindrical wall and communicating with the water outlet;

a base forming a part of the other end of the overhead support housing and including: a downwardly projecting, cylindrical support portion that receives and supports the upper end of the second cylindrical wall while permitting relative rotational movement therebetween; and a downwardly facing, circular groove that is concentric with the cylindrical support portion and receives the upper end of the first cylindrical wall while permitting relative rotational movement therebetween;

means cooperating with the upper end of the second cylindrical wall and the cylindrical support portion for preventing relative, axial movement between the unitary pump housing body, and the cylindrical support portion; and

detent means cooperating with the first cylindrical wall and the annular groove for maintaining the unitary pump housing body in a desired rotated position relative to the overhead support housing.

3,961,383

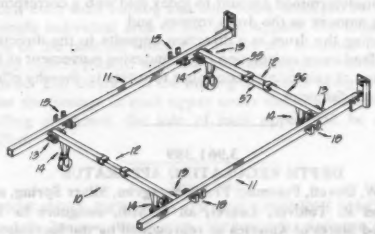
BED FRAME HAVING RELEASABLY INTERLOCKED SIDE RAILS AND CROSSBARS

Melvin P. Spitz, 619 N. Elm Drive, Beverly Hills, Calif. 90210

Filed Mar. 10, 1975, Ser. No. 556,914

Int. Cl.² A47C *19/04*

U.S. Cl. 5—181 **17 Claims**



1. In a bed frame having a pair of side rails connected with at least one end crossbar having spaced apart side walls, to provide a supporting frame structure for an associated box spring, the improvement comprising:

a. means releasably connecting the side walls of an end portion of each crossbar with a side rail, including:

a bracket secured to the side rail, said bracket having spaced apart side walls projecting inwardly from said side rail and coacting to form a socket for receiving an end portion of the connected crossbar into a seated position therein with its side walls respectively extending along the bracket walls; and

coacting parts respectively on the walls of said bracket and the walls of said seated crossbar end portion for sliding interlocked engagement in said seated position to retain said end portion against endwise withdrawal from said socket, said coacting parts during use being spaced inwardly from the terminal end of the crossbar.

3,961,384

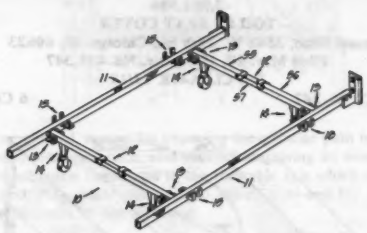
BED FRAME HAVING RELEASABLY INTERLOCKED SIDE RAILS AND CROSSBARS

Melvin P. Spitz, 619 N. Elm Drive, Beverly Hills, Calif. 90210

Division of Ser. No. 556,914, March 10, 1975. This application Aug. 18, 1975, Ser. No. 605,542

Int. Cl.² A47C *19/04*

U.S. Cl. 5—184 **7 Claims**



1. In a bed frame having a pair of side rails interconnected by at least one end crossbar to provide a frame structure for supporting a box spring, the improvement comprising:

a. the crossbar having interfitting sections connected with overlapping adjacent end portions for longitudinal extension and retraction movements to selective positions for providing a plurality of standard bed widths;

b. locking means carried by one of said overlapping end portions and being selectively manually operable to locking and non-locking positions; and

c. a plurality of slots spaced apart longitudinally of another of said overlapping end portions corresponding to said selective positions, said locking means including a part operative in said locking position to enter the slot for the selected position, and anchor the end portions against relative longitudinal movement.

3,961,385

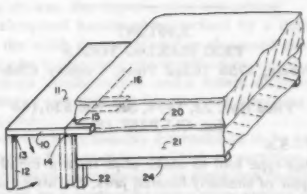
PLACEMENT FOR BEDSPREAD

Rose M. Ferry, Tracy, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Sept. 10, 1974, Ser. No. 504,753

Int. Cl.² A47C *21/00*

U.S. Cl. 5—318 **1 Claim**



1. A foldable placement platform adaptable for mounting to the mattress and spring support unit of a bed for the support of the bedspread of the bed, when the bedspread has been removed from the bed, said platform hinged to a frame member fitted with attachment means, with folding legs fitted to the underside of the platform, in which

the frame member of the device is fitted with means to clamp to the opposed sides of a mattress, and fitted with braces adaptable for fastening between the end of a clamped mattress and the end of the mattress support spring unit,

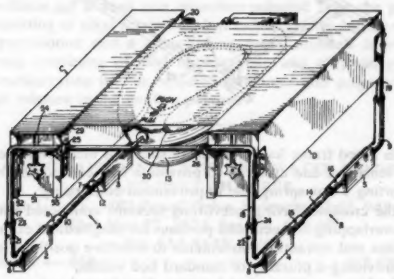
said platform and said frame member joined by hinges which permit the platform to extend in a first position in a horizontal plane away from a mattress to which the frame is clamped, with the platform supported by said hinges and by the attached legs of the platform, and said hinges permitting the platform to be rotated to a second position in a vertical plane, adjacent to the frame and extending from the frame to the floor below the frame, with the legs of the platform folded between the platform and the attached mattress support spring.

3,961,386

TOILET SEAT COVER

Ferdinand Beno, 3548 W. 25th St., Chicago, Ill. 60623

Filed Mar. 27, 1974, Ser. No. 455,347
Int. Cl.² A47K *13/18*
U.S. Cl. 4—247 **6 Claims**



1. An apparatus for providing a sanitary cover for a toilet seat having dual parallel rollers adapted to accommodate a strip of sanitary covering material and disposed on opposite sides of said seat, and crank means connected to each of said rollers for moving the sanitary covering material across the top of said seat;

the improvement consisting of,

floor engaging U-shaped leg members having front and back ends and being disposed on opposite sides of said seat,

upright support means connected to the front and back ends of each of said leg members,

means for connecting front and back ends of said rollers to respective front and back ends of said upright support members, and

frontally disposed transverse connecting means extending between the front ends only of said roller connecting means and being disposed at a lower level than said seat.

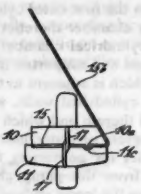
3,961,387

TRIG MAKING TOOLS

Gail E. Porter, 4750 182nd Place, Country Club Hills, Ill. 60477

Filed Nov. 22, 1974, Ser. No. 526,144
Int. Cl.² B25F *1/00*
U.S. Cl. 7—5.6 **9 Claims**

1. A plier-type tool to make clips from a metal strip and having a pair of similarly-formed jaws, the lower jaw serving as a flat base with a recess for receiving said strip from the side, said recess having an end-wall as a limit to the length of insertion of said strip and a side wall as a guide during such insertion, said walls combining to fix the location of the strip in the recess in said base, the lower jaw further containing an indentation in the bottom surface of said recess, the upper jaw being formed flat with a projection matching the indentation to impress the strip when the jaws are closed, said upper jaw further having a beveled surface on one side thereof to define



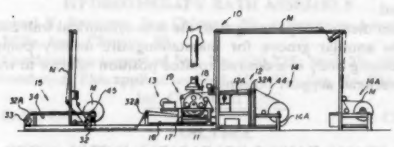
the outer limit of the inserted portion of said strip for bending the remaining portion of said strip back upon said inserted portion after said strip has been impressed.

3,961,388

METHOD AND APPARATUS FOR EFFECTING TRANSFER PRINTING

David Jaffa, Fairlawn, N.J., assignor to Precision Screen Machines Inc., Hawthorne, N.J.

Filed Jan. 3, 1975, Ser. No. 538,358
Int. Cl.² D06P *1/00, 5/15;* B41M *1/08*
U.S. Cl. 8—2.5 R **10 Claims**



8. A method of sublimation printing discrete cut-pieces of goods on a rotary drum printer comprising the steps of

continuously feeding a web having a heat transfer print thereon to a rotary drum printer as said drum rotates,

effecting the movement of said drum in the direction of feed a predetermined amount to index said web a corresponding amount as the drum rotates, and

returning the drum in a direction opposite to the direction of feed upon completion of the indexing movement as the drum of said printer continues to rotate to thereby effect a transfer print.

3,961,389

DEPTH REGULATING APPARATUS

Clark W. Dovell, Potomac; Frank Peregrim, Silver Spring, and Daniel R. Tolliver, Laurel, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 9, 1969, Ser. No. 856,414
Int. Cl.² B63B *21/52*
U.S. Cl. 9—8 R **4 Claims**

1. Apparatus for mooring a buoyant body at a preselected depth in a body of water comprising:

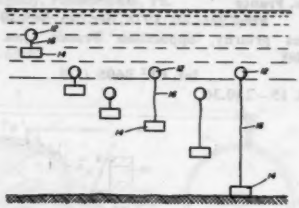
an anchor;

a mooring line connecting said buoyant body and said anchor and substantially contained within said anchor;

pressure sensing means within said anchor for measuring continuously the depth of said anchor;

means within said anchor for measuring the amount of said mooring line payed out from said anchor; and,

payout control means in said anchor responsive to said pressure sensing means and said mooring line measuring



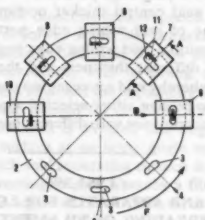
means for regulating the payout of mooring line to float the submerged buoyant body at said preselected depth.

3,961,390

PROCESSES AND DEVICES FOR BUFFING THE SOLES OF SHOE UPPERS

Antonio Giordano, Florence, Italy, assignor to Viges S.p.A., Vigevano (Pavia), Italy

Filed July 30, 1974, Ser. No. 493,190
Claims priority, application Italy, Sept. 24, 1973, 42719/73
Int. Cl.² A43D *95/00*
U.S. Cl. 12—1 A **3 Claims**



1. An apparatus for buffing the soles of shoe uppers, comprising a continuously movable annular element for supporting lasts on which are fixed the shoe uppers to be buffed, a multiplicity of buffing machines bridging said annular element, each such buffing machine being arranged for buffing a single individual area of the shoe uppers, the longitudinal axes of the lasts on which the uppers are mounted being located concentrically with the annular support element, the number and location of the buffing machines being such that, after the passage of each upper under the said multiplicity of buffing machines, the sole of such upper will be entirely buffed.

3,961,391

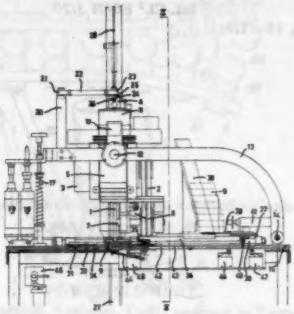
SHOE-HEEL DRESSING OR ROUGHENING MACHINE

Hendrik Joosten, Eindhoven, Netherlands, assignor to Bata Shoe Company, Inc., Belcamp, Md.

Filed Dec. 13, 1973, Ser. No. 424,332
Int. Cl.² A43D *87/00;* **B24B** *7/00*
U.S. Cl. 12—46 **8 Claims**

1. In a heel dressing machine including a roughening brush, connected to a power source

for rotation about a central axis of rotation, the axis of rotation being parallel to the work surface of the roughening brush; and a mechanism for clamping a heel during dressing of an upper surface confronting the circumferential plane of rotation of said brush, characterized in that said brush is connected to a rotatable axis, which crosses at one side perpendicular said axis of rotation of said brush and which is connected through driving means, which effects on rotation of the axis a circumferential plane for said brush, during the rotation about its axis of rotation, and in which the work surface of the brush is on a circular path over the upper surface of the heel to be



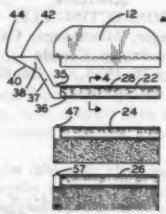
roughened, means for changing the circular path into an ellipse-shaped path, said means comprising an eccentric mechanism connected to the rotatable axis which causes said axis, while rotating, to effect a to-and-fro tilting movement in one direction.

3,961,392

CLEANING DEVICE FOR SHOWER ENCLOSURE TRACKS

Charles C. Young, Fresno, Calif., assignor to Kenneth Freeman, Exeter, Calif.

Filed June 5, 1975, Ser. No. 584,113
Int. Cl.² A47L *13/12, 25/00*
U.S. Cl. 15—105 **3 Claims**



1. In a cleaning device particularly suited for use in removing encrusted residue from metallic surfaces exemplified by the surfaces of channel shaped tracks formed of aluminum and provided for supporting sliding doors defining an enclosure for a shower, the improvement comprising:

A. an elongated handle characterized by a depth greater than the width thereof having an elongated slot extended along one surface and characterized by a cross section of a T-shape configuration, and a detent disposed in axial alignment with said slot for receiving a locking protuberance; and

B. a scouring body suitably dimensioned to be received by the tracks for removing residual encrustation from said metallic surface comprising an elongated backbone characterized by a portion having a cross section of T-shape configuration and adapted to be inserted axially into said slot, means including a locking protuberance projected from said backbone and adapted to be received by said detent for securing the backbone against axial displacement relative to said slot, and a pad of pressed polyester fiber adhered to said backbone and projecting therefrom.

3,961,393

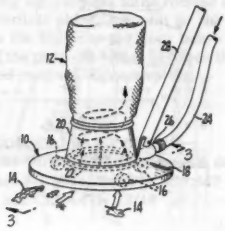
SWIMMING POOL CLEANING APPARATUS

Andrew L. Pansini, 180 Los Cerros Drive, Greenbrae, Calif. 94904

Continuation-in-part of Ser. No. 516,747, Oct. 21, 1974, abandoned. This application July 23, 1975, Ser. No. 598,245

Int. Cl.² E04H 3/20

U.S. Cl. 15—1.7 2 Claims



1. A pool cleaner comprising a housing having an upper open-ended conduit part and a lower flange part, wheels carried by the flange part to space the latter from a pool floor, a water delivery ring disposed near the lower end of the conduit part, a number of discharge ports in said ring, said ports being uniformly oriented to project jets of water in alike paths extending inwardly and upwardly toward each other and up above the upper end of the conduit part in a spiralled pattern whereby there is induced within the pool water within the conduit part an upwardly ascending, swirling current of water flow, and a water inlet conduit connected to the delivery ring.

3,961,394

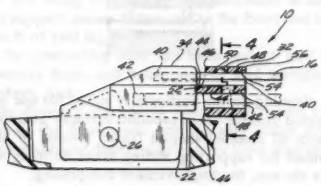
CONNECTING CLIP

Werner Thomas Steger, Mississauga, Canada, assignor to Tridon Limited, Burlington, Canada

Filed May 28, 1975, Ser. No. 581,665

Int. Cl.² B60S 1/40

U.S. Cl. 15—250.32 11 Claims



1. A connecting clip for use in connecting a windshield wiper arm to the superstructure of a windshield wiper assembly, said clip comprising a clip body having a first end portion including means for connecting the clip body to a windshield wiper superstructure and a second end portion adapted to operatively engage a windshield wiper arm, said second end portion having a pair of axially extended recesses formed therein and a wall portion separating the recesses, said recesses having different cross sectional areas for receiving wiper arms of different sizes, and said wall having an opening formed therein for receiving a locking button on the wiper arm.

3,961,395

DOUBLE STRIP WINDSCREEN-WIPER BLADE

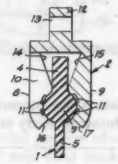
Paul Journée, Chateau de Reilly, 60 Reilly par, Chaumont-en-Vexin, France

Filed Jan. 30, 1975, Ser. No. 545,384

Claims priority, application France, Jan. 30, 1974, 74.03100

Int. Cl.² B60S 1/38

U.S. Cl. 15—250.36 4 Claims



1. A reversible windshield wiper blade assembly comprising:

an elongated support having means for holding a squeegee blade;

a squeegee blade of elastomeric material having opposed wiping edge portions and a central thicker portion between said wiping edge portions, said support releasably engaging said central thicker portion to position a selected one of said wiping edge portions in windshield wiping position, said wiping edge portions being of substantially different thickness and therefore of different stiffness whereby said squeegee may be positioned on said support to present either selected wiping edge to a windshield in accordance with different operating conditions.

3,961,396

METHOD AND APPARATUS FOR LOOSENING AND SPREADING OF FILAMENT TOWS

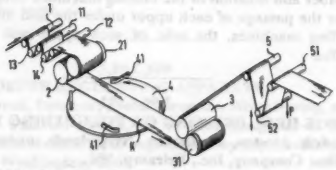
Wolfgang Lubitzsch, Lubeck-Gr. Steinrade, Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed Feb. 5, 1975, Ser. No. 547,202

Claims priority, application Germany, Feb. 5, 1974, 2405473

Int. Cl.² D01D 11/02

U.S. Cl. 19—65 T 6 Claims

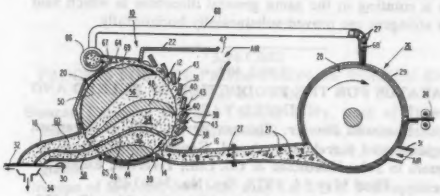


1. The method of loosening and spreading the filaments of a tow comprising guiding the tow to a tensioning zone, applying tension to the filaments of the tow while advancing same in said zone, and exerting a plucking force on said tow by successively moving inclined profiles from one side of the tow to the other across the filaments thereof as said tow is advanced in said zone.

3,961,397
CLUMP REMOVAL DEVICES

Rudolf Neuenschwander, Swarthmore, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Nov. 21, 1974, Ser. No. 525,966
Int. Cl.² D01G *5/00*
U.S. Cl. 19—65 R **13 Claims**



1. A device for removing fiber clumps from an air stream containing substantially individualized fibers and fiber clumps suspended therein, said device including

A. an inlet duct for receiving said air stream;

B. a foraminous separating surface movable past said inlet duct for intercepting said air stream to prevent fiber clumps from passing therethrough;

C. pressure control means for establishing a pressure drop through the separating surface to direct the air stream and substantially individualized fibers through said separating surface;

D. stationary air-flow directing means spaced from the inlet duct in the direction in which the separating surface is movable past said inlet duct, said air-flow directing means being in communication with inrushing air and being positioned closely adjacent the separating surface on the high pressure side thereof for confining the flow of said inrushing air so that it is directed into engagement with the separating surface at an acute angle opposed to the direction in which said separating surface is movable past said air-flow directing means, whereby a fiber/clump mix directed into the region of the air-flow directing means by the separating surface will be subjected to a vigorous rolling action which separates individual fibers from the fiber/clump mix for passage through the separating surface; and

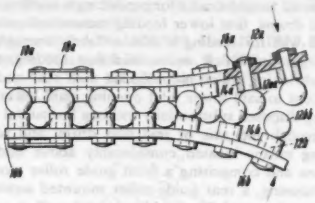
E. clump-removal means for removing clumps that do not pass through the separating surface.

3,961,398
SEPARABLE FASTENING

Walter Herterich, Dachau, and Georg Probst, Munich, both of Germany, assignors to Ecofon Verkaufsgesellschaft Probst KG, Munich, Germany

Filed Feb. 20, 1975, Ser. No. 551,265
Claims priority, application Germany, Feb. 27, 1974, 2409445; Jan. 23, 1975, 2502741
Int. Cl.² A44B *19/08, 19/40*
U.S. Cl. 24—205.12 **10 Claims**

1. In a separable fastening comprising two elastically deformable carriers each supporting a plurality of rows of coupling pins having spherical, substantially non-deformable heads, which heads can be brought by elastic deformation of one of the carriers into non-positive engagement behind oppositely located and offset heads of the other carrier to close the fastening, said carriers each having a strip form with a longitudinal dimension several times longer than the width dimension thereof, the improvement wherein each row of pins on each of said carriers extends substantially at right angles to the longitudinal axis of said carriers and has a separate and substantially non-elastic reinforcement member of a strip form connected to each of said pins in one of said rows and to one of said carriers to extend substantially at right angles to said longitudinal axis of said carrier, said reinforcement member having a longitudinal dimension substantially equal to the width dimension of said carrier, whereby the fastening can be

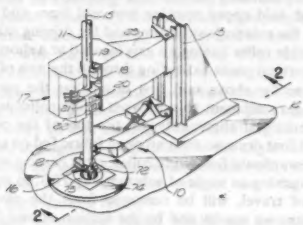


separated only in the direction of said longitudinal axis of said carriers.

3,961,399
POWER SLIP UNIT

George I. Boyadjieff, Anaheim, Calif., assignor to Varco International, Inc., Orange, Calif.

Filed Feb. 18, 1975, Ser. No. 550,776
Int. Cl.² E21B *3/04*
U.S. Cl. 24—263 DG **26 Claims**



1. The combination comprising:

a slip assembly including a plurality of relatively movable slips having inner pipe gripping portions and outer downwardly tapering faces adapted to be cammed inwardly by downward movement relative to a coacting tapered bowl; and

powered means for releasably clamping said slips inwardly against a generally vertical well pipe by force exerted other than through the camming action of said bowl, and with a force sufficient to releasably lock the slips to the pipe for vertical movement therewith relative to the bowl;

said slips including a central slip and two clamping slips hinged to opposite sides thereof;

said powered means including a piston and cylinder mechanism acting in opposite directions against said two side slips respectively to power actuate them against the pipe.

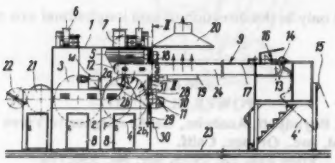
3,961,400
PERFORATED DRUM DRIER

Walter Schmid, Gaertringen, Germany, assignor to Erich Kiefer, Lufttechnische Anlagen G.m.b.H., Gaertringen, Germany

Filed Aug. 10, 1971, Ser. No. 170,592
Claims priority, application Germany, Sept. 7, 1970, 2044217
Int. Cl.² D06C *3/02*
U.S. Cl. 26—80 **7 Claims**

1. A perforated drum drier for alternately treating an open knit fabric or a tubular knit fabric, comprising a drier housing having front and rear end walls and an upper inlet opening and a lower inlet opening in said rear end wall, at least two drums

rotatably mounted in a row behind and parallel to each other in said housing and having perforated peripheral walls, the first of said drums being located adjacent to said rear end wall, means connected to said drums for producing a suction at the inside of said drums, first lower feeding means connected to said rear end wall for feeding a tubular fabric through said lower opening to said first drum, said first feeding means including a shrinking roller mounted on said rear end wall closely adjacent to said lower inlet opening, said lower inlet opening being disposed substantially within a horizontal plane extending through the axis of said first drum, and second upper feeding means located considerably above said first feeding means and comprising a front guide roller mounted within said housing, a rear guide roller mounted outside of said housing and spaced from said rear end wall, a pair of



endless pin-studded stentering chains parallel to and laterally spaced from each other and movable between and over said guide rollers and forming upper and lower chain stringers extending substantially horizontally between said guide rollers and through said upper opening into and from said housing, and means for rotating said drums and for driving said chains, said first guide roller having an axis located at a short distance beyond a vertical plane extending through the axis of said first drum and so far above said first drum that the part of said lower stringers adjacent to said front guide roller is substantially in horizontal alignment with the top of the perforated wall of said first drum so than an open fabric fed on said upper stringers toward said first guide roller, after passing arour.d the latter and turning an angle of substantially 180° to reverse the direction of travel, will be removed from the pins of said chains by its own gravity and by the suction of said first dfum and will be transferred substantially simultaneously to the peripheral perforated wall of said first drum while said drum is rotating in the same general direction in which said lower stringers are moved substantially horizontally.

6. A perforated drum drier for alternately treating an open knit fabric or a tubular knit fabric, comprising a drier housing having front and rear end walls and an upper inlet opening and a lower inlet opening in said rear end wall, at least two drums rotatably mounted in a row behind and parallel to each other in said housing and having perforated peripheral walls, the first of said drums being located adjacent to said rear end wall, a wind screen mounted in said first drum near the peripheral wall thereof, said wind screen having a section substantially facing said inlet openings, said section being pivotable toward the inside of said drum, means connected to said drums for producing a suction at the inside of said drums, first lower feeding means connected to said rear end wall for feeding a tubular fabric through said lower opening to said first drum, and second upper feeding means located considerably above said first feeding means and comprising a front guide roller mounted within said housing, a rear guide roller mounted outside of said housing and spaced from said rear end wall, a pair of endless pin-studded stentering chains parallel to and laterally spaced from each other and movable between and over said guide rollers and forming upper and lower chain stringers extending substantially horizontally between said guide rollers and through said upper opening into and from said housing, and means for rotating said drums and for driving said chains, said first guide roller having an axis located at a short distance beyond a vertical plane extending through the axis of said first drum and so far above said first drum that the part of said lower stringers adjacent to said front guide roller is substantially in horizontal alignment with the top of the perforated wall of said first drum so that an open fabric fed on said upper stringers toward said first guide roller, after passing around the latter and turning an angle of substantially 180° to reverse the direction of travel, will be removed from the pins of said chains by its own gravity and by the suction of said first drum and will be transferred substantially simultaneously to the peripheral perforated wall of said first drum while said drum is rotating in the same general direction in which said lower stringers are moved substantially horizontally.

3,961,401

APPARATUS FOR THE PRODUCTION OF BULKED AND CRIMPED YARN

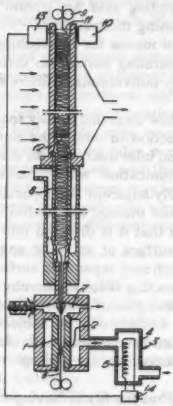
Duncan Cameron Ferrier; Thomas Berry, both of Tiverton, England, and Karel Murenbeeld, Geneva, Switzerland, assignors to John Heathcoat & Co. Ltd., Tiverton, England

Filed May 14, 1973, Ser. No. 360,145

Claims priority, application United Kingdom, May 17, 1972, 23070/72; Oct. 12, 1972, 47082/72; Apr. 7, 1973, 16812/73; May 17, 1972, 23071/72

Int. Cl.² D02G 1/20, 1/12

U.S. Cl. 28—1.3 **18 Claims**



1. A device for producing bulked and crimped filamentary yarn of controlled quality, comprising yarn feed means for receiving yarn and propelling it forwardly, means for receiving the yarn and arranging it in a crimped bulked state in the form of an elongated package extending in a direction away from the yarn feed means, variable heat exchanging means arranged in heat exchanging relationship with the yarn, means for taking off bulked and crimped yarn from the end of the package remote from said yarn feed means, means for sensing the position of the take-off end of the yarn package and generating a corresponding take-off signal, and means for receiving the take-off signal and controlling the operation of the heat-exchanging means in conformity with the information contained in the take-off signal so as to determine the quantity of heat exchanged between the heat-exchanging means and the yarn being fed to the package.

11. A device for producing bulked and crimped filamentary yarn of controlled quality, comprising yarn feed means for receiving yarn and propelling it forwardly, variable heat-exchanging means arranged in heat-exchanging relation with the yarn, means arranged to cause the yarn filaments to separate, thereby bulking the yarn, yarn receiving means arranged to receive the bulked yarn and arrange it in a crimped state in the form of an elongated package extending in a direction away from the yarn feed means, means for taking off bulked and crimped yarn from the end of the package remote from

the yarn feed means, means for sensing the position of the take-off end of the yarn package and generating a corresponding take-off signal, and means for receiving the take-off signal and controlling the operation of the heat-exchanging means in conformity with the information contained in the take-off signal so as to determine the quantity of heat exchanged between the heat-exchanging means and the yarn being fed to the package.

3,961,402

PROCESS FOR THE PRODUCTION OF BULKED AND CRIMPED YARN

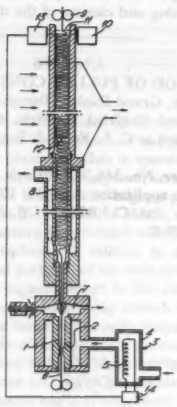
Duncan Cameron Ferrier; Thomas Berry, both of Tiverton, England, and Karel Murenbeeld, Geneva, Switzerland, assignors to John Heathcoat & Company Ltd., Tiverton, England

Division of Ser. No. 360,145, May 14, 1973. This application Dec. 16, 1974, Ser. No. 533,028

Claims priority, application United Kingdom, Oct. 12, 1972, 47082/72; Apr. 7, 1973, 16812/73; May 17, 1972, 23070/72

Int. Cl.² D02G *1/12, 1/20*

U.S. Cl. 28—72.14 2 Claims



1. A method of producing bulked and crimped yarn of substantially constant quality by the use of a bulking and crimping device of the type incorporating means arranged to receive yarn and propel it forwardly so as to form an elongated package extending in a direction away from the receiving and propelling means, the yarn being added to one end of the package and being taken off from the other end of the package in a bulked and crimped state, comprising sensing the deviation of the position of the take-off end of the package from a predetermined datum position, generating a signal containing information about the magnitude of the said deviation and using said signal to control the temperature of the yarn being fed to the package so that the temperature of the yarn is a function of the deviation of the position of the take-off end of the yarn package from the predetermined datum position.

3,961,403

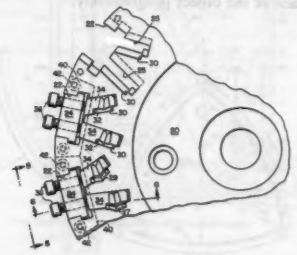
CUTTER HEAD ASSEMBLY FOR GEAR CUTTING MACHINERY

Ernst J. Hunkeler, Fairport, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Division of Ser. No. 428,989, Dec. 27, 1973, Pat. No. 3,881,889. This application Apr. 9, 1975, Ser. No. 566,509

Int. Cl.² B26D *1/12*

U.S. Cl. 29—105 A 2 Claims



1. An improved cutter head assembly for use with a gear cutting machine, comprising

a disc-shaped cutter head body,

a plurality of clamping slots formed into the periphery of said cutter head body for receiving clamping members;

two or more blade-receiving slots formed in open communication with each of said clamping slots, each of said blade-receiving slots being of a sufficient size and shape to receive a single cutting blade, said blade-receiving slots being formed at angles to longitudinal axes of said cutter head body so that cutting faces of cutting blades can be carried at angles corresponding to the angles of said slots, whereby the cutting blades can be removed, resharpened, and replaced into said slots without removing any stock from their cutting faces,

a plurality of cutting blades which can be inserted and clamped into the cutter head body so as to project axially outwardly from one face of said cutter head body, and

a plurality of clamping members for securing said cutting blades in place, each of said clamping members being provided with separate screw members for bearing against each separate cutting blade carried by the blade-receiving slots associated therewith.

3,961,404

METHOD FOR MACHINING A GROOVE IN A METAL SURFACE

Alexander Goloff, East Peoria, and Hiram Allen Brubaker, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 1, 1975, Ser. No. 573,680

Int. Cl.² B23P *15/10*

U.S. Cl. 29—156.5 R 6 Claims

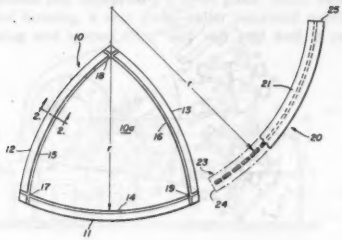
1. A method of providing an essentially planar face of a metal object with a groove which extends between selected margins of said face without intersecting said margins, said groove being uniformly curved on an arc of radius "*r*" and being of a width "*w*" and a constant depth "*d*",said method comprising:

providing a broach which is uniformly curved from a leading end to a trailing end on an arc of radius "*r*", said broach having a base with a planar surface of width greater than "*w*", and a series of fixed cutting teeth of width "*w*" perpendicular to said surface, the teeth of said series being progressively longer from said leading end toward said trailing end and the last tooth in said series being of a length no less than "*d*";

positioning said article so that its planar face is perpendicular to an axis and the line of the groove to be cut is on an arc of a circle of radius "r" struck about said axis;

positioning said broach so that it occupies an arc of said circle in a plane parallel to said face and with the leading end portion of the planar surface of the broach base confronting said face;

producing relative motion of the object and the broach about said axis with said surface moving in a plane parallel to said face, so as to cause said series of teeth to cut said face of the object progressively;



continuing said motion until all of said teeth have traversed the entire object to form a continuous groove which intersects both of said selected margins;

and plugging the end portions of the groove to effectively obliterate said groove for predetermined distances inwardly from said selected margins.

6. The method of claim 1 in which the object is a piston of an engine of the trochoidal type which has a planar face bounded by arcuate faces, a groove is cut in the planar surface parallel to each of the arcuate faces of the piston so that said grooves intersect adjacent the intersections of said arcuate faces, and portions of said grooves are plugged from said arcuate faces inwardly toward, but not through said intersections.

3,961,405

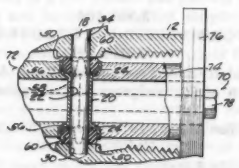
METHOD OF FABRICATING A BUTTERFLY VALVE

Daniel T. Robinson, West Allis, Wis., assignor to Milwaukee Valve Company, Inc., Milwaukee, Wis.

Division of Ser. No. 401,343, Sept. 27, 1973, Pat. No. 3,902,697. This application June 2, 1975, Ser. No. 582,953

Int. Cl.² B23P *15/00*

U.S. Cl. 29—157.1 R **6 Claims**



1. In a method for fabricating a butterfly valve including a body having a generally cylindrical bore defining a flow passage which extends substantially straight through the body, coaxial apertures in the body for rotatably journaling a stem which extends transversely of the flow passage, a generally circular disc member having a peripheral groove and mounted on the stem for rotatable movement between an open position and a closed position to shutoff flow, and a sealing ring disposed in the disc member groove, the steps comprising

forming the sealing ring as a unitary member including a pair of opposed annular sections adapted to encircle the stem at locations adjacent to the valve body bore and a pair of semicircular sections respectively connecting the annular sections and adapted to sealingly engage the valve body bore when the disc member is in the closed position;

forming a pair of identically arranged disc halves from a relatively thin material, each of the disc halves including a generally semicylindrical portion which, upon face-to-face assembly of the disc halves, cooperates with the corresponding semicylindrical portion of the other disc half to define a hub for receiving the stem and peripheral flange which lies away from a plane coincident with the confronting face, and upon face-to-face assembly of the disc halves, cooperates with the corresponding peripheral flange on the other disc half to define the peripheral groove for receiving the sealing ring;

installing the sealing ring inside the bore with the annular sections coaxially aligned with the body apertures and the semicircular sections located in a position generally corresponding to the closed position of the disc member;

inserting the stem into the body apertures and through the annular sealing ring sections;

installing the disc halves in facing relationship through the opposite ends of the bore;

moving the two disc halves into juxtaposition whereby the hub-defining portions thereof engage the opposite outer surfaces of the stem and the peripheral flanges thereof compressively engage the sealing ring; and

fastening each of the disc halves to the stem to form an assembled disc member wherein the sealing ring is positively restrained from being twisted or dislodged from the peripheral groove defined by the cooperating disc flanges during opening and closing of the disc member.

3,961,406

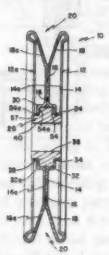
METHOD OF PULLEY CONSTRUCTION

Charles C. Frost, Grand Rapids; Douglas J. Van Der Meulen, Shelbyville, and Siegfried K. Weis, Grand Rapids, all of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Division of Ser. No. 346,329, March 30, 1973, Pat. No. 3,898,888. This application Apr. 30, 1975, Ser. No. 573,037

Int. Cl.² B21K *1/28, 1/42*

U.S. Cl. 29—159 R **19 Claims**



1. The method of high speed precision pulley wheel construction comprising, the steps of:

a. providing a pair of identical flat metallic discs having identical means defining a central opening;

b. stamping said discs in a die such that each of said discs have an outwardly extending annular outer portion, a flat radially extending web portion, and an inner flange portion formed with a first portion extending axially away from said web portion and a second portion extending radially inward from said first portion;

c. forming a coined surface of reference on the inner surface of said second flange portion whereby said inner surface is offset outwardly from said coined surface;

d. providing an annular hub member with means for receiving a shaft, said hub member including an annular projection having relatively flat radial and axial sides;

e. joining said pair of identical discs back-to-back with said hub member captured between said flange portions, said flange portions forming a pocket for said hub member such that the inner surface of said first portion of said flange portions is in positive press face-to-face contact with the axial sides of said hub projection and the inner surface of said second portion of said flange portion is in positive press face-to-face contact with the radial side of said hub projection with said coined surface indexing said discs relative said hub member to prevent lateral and radial movement relative said discs; and

f. joining said discs together to form said pulley wheel.

3,961,407
MANUFACTURE OF CONSTRUCTION ELEMENTS

Johan Caspar Falkenberg, Fjordveien 59 c, N-1322 Hovik, Norway

Filed Jan. 23, 1975, Ser. No. 543,301
Int. Cl.² B23P 19/00
U.S. Cl. 29—200 B **12 Claims**

1. Apparatus for the manufacture of construction elements which include upper and lower plates of nailable material and web strips holding the plates together in spaced apart relationship, the web strips comprising elongated, sinuous sheet metal strips having along their longitudinal edges a plurality of teeth which are embedded in the respective plates, characterized in that a supporting structure is provided with means mounted thereon which are displaceable relative to each other and adapted to grip the end portions of the web strips and adapted to be moved relative to each other in the respective length directions of the web strips to thereby stretch these web strips to their predetermined lengths, the web strips and the upper and lower plates of the elements being pressed together and the means being adapted to hold the web strips in a stretched condition while the strips and plates are pressed together, and locating means for mutual vertical alignment of the element plates and stretched web strips.

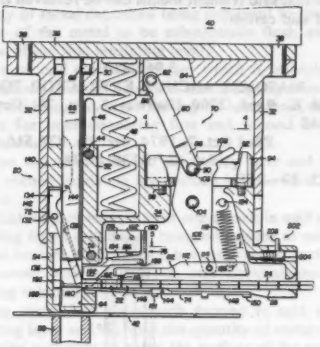
3,961,408
FASTENER INSTALLATION HEAD

Dale H. Goodsmith, and Harold A. Ladouceur, both of Livonia, Mich., assignors to Multifastener Corporation, Detroit, Mich.

Filed May 5, 1975, Ser. No. 574,775
Int. Cl.² B23P 19/04
U.S. Cl. 29—208 C **10 Claims**

1. In a fastener installation head having an elongated nut passage for receiving a plurality of nuts aligned in side to side relation for installation by said head, a transverse plunger passage having a reciprocating plunger therein communicating with said nut passage and receiving nuts beneath said plunger, for installation through said plunger passage upon actuation of said plunger, the improvement comprising:

a nut sensor means located within said nut passage having an electrical switch interconnected with the actuation circuit of said plunger and a probe means sensing the presence or absence of a nut adjacent said plunger passage, said probe means including an arm extending generally parallel to said nut passage with said arm normally engaging the nut adjacent said plunger passage and said arm closing said switch when a nut is located adjacent

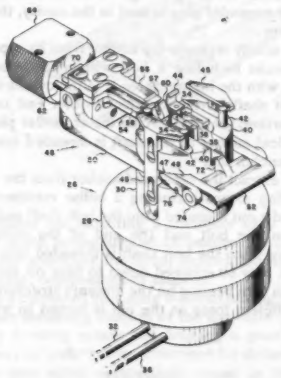


said plunger passage, ready for installation and said probe means opening the plunger actuation circuit and preventing actuation of said plunger when a nut is not located adjacent said plunger passage ready for installation.

3,961,409
MACHINE FOR UNLOADING MICRO-ELECTRONIC BEAM LEAD CHIPS

Theodore R. Sherwood, Sunnyvale, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed June 30, 1975, Ser. No. 592,126
Int. Cl.² B23P 19/02
U.S. Cl. 29—235 **9 Claims**



1. A machine for unloading micro-electronic beam lead chips from a carrier that includes a carrier base, a cover and a two-legged resilient clip, said machine comprising:

a machine base including a means for receiving and retaining a beam lead chip carrier, said receiving and retaining means aligning the carrier to the machine base means,

a carriage moveable in said machine base, said carriage including an actuator means, a first finger means, a second finger means and a pusher means,

said first finger means adapted for engaging one leg of said resilient clip,

said second finger means including at least one rotatable expander on the end thereof, said pusher means cooper-

ating with said rotatable expander to rotate said expander to engage the second leg of said resilient clip to thereby disengage said resilient clip from the rest of said carrier, and

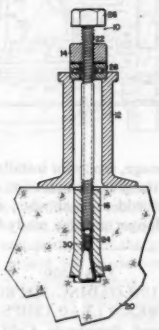
means for locking said pusher relative to said second finger so that said resilient means can be removed from the rest of said carrier.

3,961,410

MASONRY ANCHOR EXTRACTOR TOOL

Donald K. Reed, 2700 Highway 1, Sp. 28, Oceano, Calif. 93445

Filed Oct. 7, 1974, Ser. No. 478,516
Int. Cl.² B23P *19/04*
U.S. Cl. 29—256 7 Claims



1. An extractor tool to remove a masonry anchor or the like from a cavity in a masonry structure, the masonry anchor including a cylindrical anchor with internal threads, the anchor when installed being wedged into the side walls of the cavity by an expander plug seated in the cavity, the extractor tool including

means to axially separate the anchor from its expander plug, said means including a bolt with a threaded shaft for mating with the inernal threads in the cylindrical anchor, the bolt shaft having a reduced outer end to provide a stud portion, the stud forcing the expander plug from the cylindrical anchor as the shaft is threaded into the cylindrical anchor and

means to extract the separated anchor from the cavity, said extracting means including a collar member about the bolt and a nut threaded onto the bolt shaft and positioned between the bolt and the end of the collar member whereby when the bolt shaft is threaded into an anchor, the nut may be screwed down to bear on the collar, the collar in turn bearing on the masonry structure and exerting sufficient force as the nut is turned to withdraw the anchor.

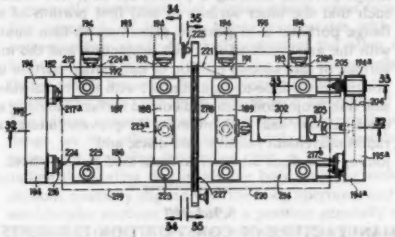
3,961,411

VOUSSOIR FOR A LINING, AND METHOD FOR CONSTRUCTING THE LINING

Jacques Francois Oger, Pont-a-Mousson, France, assignor to Pont-A-Mousson S.A., Pont-a-Mousson, France

Division of Ser. No. 441,927, Feb. 12, 1974, Pat. No. 3,946,567. This application June 25, 1975, Ser. No. 590,341
Claims priority, application France, Feb. 19, 1973, 73.05727; Jan. 31, 1974, 74.03310
Int. Cl.² B23Q *1/00, 3/00, 7/04*
U.S. Cl. 29—283 24 Claims

1. A pre-assembling jig for pre-assembling voussoirs into a substantially part cylindrical panel, comprising a frame provided with a device for supporting webs of the voussoirs, the support device having the general shape of a portion of a cylinder, a bearing device for bearing against walls of the voussoirs, the bearing device having at least one group of bearing means arranged in two parts in two mean planes which



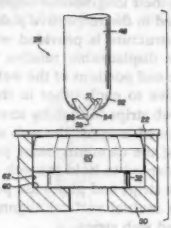
are perpendicular to said cylindrical shape and located at a predetermined distance from each other, and spreading device for spreading apart the voussoirs toward the bearing means.

3,961,412

METHOD OF INSTALLING A FASTENER

Harold A. Ladouceur, Livonia, Mich., assignor to Multifastener Corporation, Detroit, Mich.

Division of Ser. No. 476,747, June 5, 1974, Pat. No. 3,923,089, which is a continuation-in-part of Ser. No. 353,049, April 20, 1973, which is a continuation-in-part of Ser. No. 149,517, June 3, 1971, abandoned. This application June 30, 1975, Ser. No. 591,669
Int. Cl.² B23P *9/00;* B21D *39/00;* B23P *11/00*
U.S. Cl. 29—445 4 Claims



1. In a method of installing a nut on a metal panel, the nut having a flat end face and an axial bore generally perpendicular to said end face, said nut further having a counterbore concentric with said axial bore including a crown-shaped indent to define a plurality of points projecting toward said end face, the steps of:

orienting said nut end face against a face of the panel;

piercing the panel in alignment with the nut bore by a piercing tool having a tip including a plurality of tearing edges inclined relative to the nut bore axis, said tearing edges being aligned with each of the points of said counterbore; and

deflecting the panel material circumscribed by said nut counterbore axially to form an annular panel projection terminating in a crown-shaped end conjugate and mating with said counterbore indent and radially outward into contact with the longitudinal surfaces defined by said counterbore.

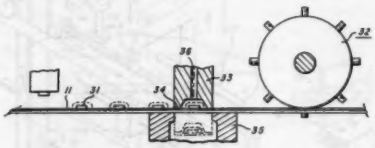
3,961,413
METHOD AND APPARATUS FOR THE ASSEMBLY OF SEMICONDUCTOR DEVICES

Terry Wayne Noe, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 320,349, Jan. 2, 1973, Pat. No. 3,859,718. This application July 12, 1974, Ser. No. 486,266

Int. Cl.² B01J 17/00

U.S. Cl. 29—569 R **3 Claims**



1. Apparatus for use in the assembly of semiconductor devices, wherein a flexible film-supported interconnect pattern is bonded to a lead frame, comprising in combination:

a. indexing means for moving the interconnect pattern into a position of alignment corresponding to its assembled relationship with the lead frame;

b. a bonding tool having a tip geometry shaped to provide uniform simultaneous contact with each of a plurality of to-be-bonded locations on said lead frame;

c. a punching means shaped to mate with said tip geometry;

d. a shearing die located near said pattern and between said punching means and said bonding tool, aligned to coincide with said position of alignment of the pattern with the lead frame; and

e. means for advancing said punching means in contact with the film supporting said interconnect pattern, then through said shearing die to a position which forces said pattern in contact with said lead frame, and which presses said frame against the bonding tool with a pressure sufficient to complete a bonding operation.

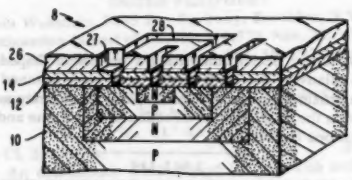
3,961,414
SEMICONDUCTOR STRUCTURE HAVING METALLIZATION INLAID IN INSULATING LAYERS AND METHOD FOR MAKING SAME

Charles B. Humphreys, Pleasant Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 261,348, June 9, 1972, Pat. No. 3,838,442, which is a continuation of Ser. No. 28,891, April 15, 1970, abandoned. This application May 6, 1974, Ser. No. 467,347

Int. Cl.² B01J 17/00

U.S. Cl. 29—577 **7 Claims**



1. A method of forming metallization over the surface of a semiconductor body comprising:

forming a first passivating layer over the surface of the body which is insensitive to an etchant, said layer having openings therein for providing contacts to said body;

forming on top of the first passivating layer and in said contact openings a first insulating layer which is removable by the etchant;

etching with said etchant at least one trench in the first insulating layer, said trench being connected to at least one contact opening and the bottom of the trench being the upper surface of the first passivating layer, and simultaneously re-exposing said contact openings;

depositing metal into the trench and contact openings, the quantity of metal deposited being sufficient to cause the surface of the metal to be substantially flush with the surface of the first insulating layer;

forming a second passivating layer which is insensitive to said etchant used on said first insulating layer and said metal, said second layer having at least one via hole therein for interconnecting first and second levels of metallization;

forming on top of said second passivating layer and in said hole a second insulating layer which is removable by the etchant;

etching with said etchant at least one trench in said second insulating layer, said trench being connected to said hole and the bottom of the trench being the upper surface of the second passivating layer, and simultaneously re-exposing said hole;

depositing metal into the trench formed in said second insulating layer and via hole, the quantity of metal deposited being sufficient to cause the surface of the metal to be substantially flush with the surface of said second insulating layer.

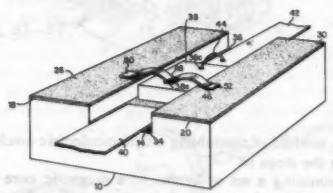
3,961,415
CARRIER FOR MOUNTING A SEMICONDUCTOR CHIP AND METHOD THEREFOR

John M. Davis, Jr., Torrance, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 2, 1975, Ser. No. 538,059

Int. Cl.² B01J 17/00

U.S. Cl. 29—591 **2 Claims**



1. A method for mounting a transistor chip of specified height and width having at least an emitter, a collector and a base, and for providing minimum emitter inductance of the transistor chip, comprising the steps of:

selecting a carrier of insulating material having a top surface for later mounting thereon of the transistor chip;

precisely forming means for defining a groove having a bottom and walls in the carrier and for defining a groove depth and width substantially equal to the specified height and width of the transistor chip, thereby for ensuring that the transistor chip and carrier top surface will be substantially coplanar when the transistor chip is mounted on the carrier and wherein the top surface is divided into two spaced portions by the groove means;

metallizing only the top surface and the groove bottom of the carrier for defining contact areas for emitter, collector and base leads with means for defining an unmetallized portion in the bottom of the groove means extending between the walls thereof and thereby for defining separate contact areas for base and collector leads;

placing the transistor chip in the groove means thereof and bonding the transistor chip and its collector to the collector lead contact area;

bonding ribbon leads respectively to the separate contact areas in the bottom of the groove means for forming the base and collector leads;

bonding a lead between the base of the transistor chip and the base lead;

laying a ribbon lead having a center portion on the emitter of the transistor chip and having end portions on the metallized top surface portions for defining a pair of the emitter leads, with the ribbon lead center portion overlaying the transistor chip emitter and with the ribbon lead end portions overlaying the emitter leads; and

bonding the ribbon lead end portions and center portion to their respective metallized emitter leads and transistor chip emitter.

3,961,416

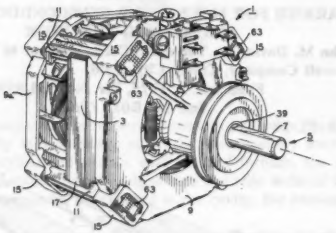
METHOD OF ASSEMBLING A DYANAMOELECTRIC MACHINE

Charles W. Otto, DeKalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 495,941, Aug. 9, 1974, abandoned, which is a division of Ser. No. 397,693, Sept. 17, 1973, Pat. No. 3,844,024, which is a continuation-in-part of Ser. No. 246,219, April 21, 1972, abandoned. This application June 9, 1975, Ser. No. 585,148

Int. Cl.² H02K *15/16*

U.S. Cl. 29—596 **42 Claims**



1. A method of assembling a dynamoelectric machine comprising the steps of:

a. mounting a set of beams to a magnetic core with two spaced portions of each beam extending from opposite faces of the core, respectively;

b. positioning a rotor within the bore of the magnetic core with a rotor shaft journaled through a bearing of a first bearing carrying end shield;

c. positioning the set of beam portions extending from one of the opposite faces of the core within a set of sockets in the first bearing carrying end shield with an air gap existing between the inner walls of the sockets and the extending beam portions residing therewithin;

d. filling at least portions of the air gaps with molten metal;

e. solidifying the molten metal to form metallic plugs within the sockets in abutment with the inner socket walls and the extending beam portions residing therewithin;

f. positioning the set of beam portions extending from the other of the opposite faces of the core within a set of second sockets in a second bearing carrying end shield with air gaps existing between the inner walls of the second sockets and the extending beam portions residing therewithin, and with the rotor shaft journaled through the bearing of the second bearing carrying end shield;

g. filling at least portions of the air gaps within the second set of sockets with molten metal; and

h. solidifying the molten metal in the second set of sockets in abutment with the second set of socket inner walls and the extending beam portions residing therebetween.

3,961,417

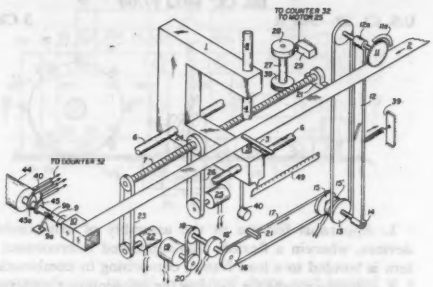
METHOD OF AND MEANS FOR WINDING COILS FROM FOIL OR STRIP WHEN COILS HAVE SEVERAL TAPS

Howard A. George, Railroad Plaza, Oyster Bay, N.Y. 11771

Filed May 5, 1975, Ser. No. 574,541

Int. Cl.² H01F *41/10*

U.S. Cl. 29—605 **5 Claims**



1. In a machine for winding electrical coils from thin strip or ribbon composed of a spindle on which the conductor is wound; means for welding connections to the strip with predetermined spacing, means for moving the welding unit in relation to the winding spindle, means for precisely rotating the winding spindle and consistently stopping it at a fixed position, and means for measuring precisely the length of one turn of the coil, the welding being moved a distance dependent on the results of the measuring so as to locate and weld each connection at a point that will cause it to fall in the required place when the strip has been would into a coil.

3,961,418

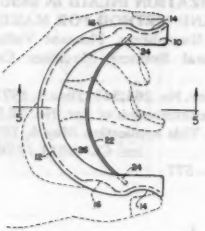
LEMON PEELER

Michael J. Neveu, 35755 Chestnut, Wayne, Mich. 48184

Filed July 23, 1975, Ser. No. 598,418

Int. Cl.² A47J *17/04*

U.S. Cl. 30—123.5 **5 Claims**



1. A lemon peeler comprising a horseshoe-shaped frame, and a relatively flat blade having ends each fastened to said frame proximate each end thereof, said blade being arcuately bowed in the same general direction as said frame and having at least one cutting edge.

3,961,419

METHOD OF CUTTING AND REMOVING SUTURES

Boris Schwartz, 400 Park Ave., Paterson, N.J. 07504

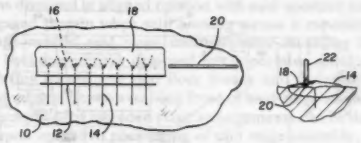
Filed June 30, 1975, Ser. No. 592,087

Int. Cl.² A61B *17/10, 17/32, 19/00*

U.S. Cl. 128—303 R **5 Claims**

1. The method of cutting and removing surgical sutures with apparatus having a potential one time use, said method including the steps of: (a) forming a cutting blade member having a height not exceeding one-eighth inch, this cutting blade member being made of inexpensive metal and having a blunt end

formed on the distal end of this member and adjacent thereto is formed a cutting blade portion, this blunt end being configured so as to make accidental penetration of the skin difficult; (b) forming the cutting blade portion with an edge of a sufficient sharpness so as to sever surgical sutures when this cutting edge portion is brought underneath the suture and while in tensioned engagement with the suture moving the cutting edge so as to slide the cutting edge across the suture and with a slight upward pressure effect a cutting of the suture; (c)



forming a handle means and attaching it to the cutting blade portion to provide a cutter assembly to enable grasping and manipulating of this cutter assembly so as to guide and slide the cutting blade portion under and across the sutures, and (d) supplying a length of flexible tape-like material having one surface coated with an adhesive having sufficient adhesion to entrap and retain the sutures and pulling the sutures from the skin of the patient as the sutures are cut and pressing this length of tape onto the uncut sutures prior to their being severed by the cutter.

3,961,420

DENTAL RESTORATION COMBINING DENTAL PORCELAIN AND IMPROVED WHITE GOLD ALLOY

Joseph J. Tuccillo, Norwalk, Conn., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 370,496, June 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 190,686, Oct. 19, 1971, abandoned. This application June 26, 1974, Ser. No. 483,271

Int. Cl.² A61C *13/00*

U.S. Cl. 32—8 **8 Claims**

1. A dental restoration comprising a cast white gold alloy metal base in the shape of a tooth, said alloy consisting essentially, in percent by weight, of 50 to 54% gold; 27 to 31% palladium; 11 to 16% silver; about 0.05 to about 0.25% of a Group VIII metal selected from the group consisting of iridium and ruthenium, and a total of 4.5 to 8% indium and tin, provided there is at least 2% indium and no more than 4.5% tin, and further provided that if there is less than about 6% indium, there must be at least 0.25% tin, and dental porcelain covering said metal base and baked-on-thereto.

3,961,421

ORTHODONTIC ELASTIC BAND WITH VARYING OUTER PERIPHERY

Melvin Wallshein, 8645 Bay Parkway, Brooklyn, N.Y. 11214

Continuation-in-part of Ser. No. 310,574, Nov. 29, 1972, Pat. No. 3,879,850. This application Apr. 10, 1975, Ser. No. 566,752

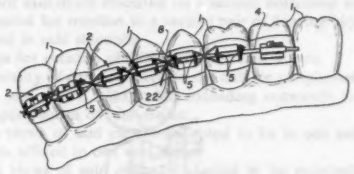
The portion of the term of this patent subsequent to Apr. 29, 1992, has been disclaimed.

Int. Cl.² A61C *7/00*

U.S. Cl. 32—14 A **50 Claims**

1. An orthodontic elastic band for use with orthodontic bracket means mountable on teeth, each bracket means at least partially defining an opening of predetermined cross-sectional dimension adapted to receive at least a portion of an orthodontic elastic band therein, at least one of said bracket openings having at least one engaging and retaining surface adjacent thereto,

said elastic band comprising an elongated elastic member having, distributed over a substantial length thereof, alternately arranged portions of larger and smaller dimensions relative to a substantially straight and substantially central axial line passing through the elongated band when it is in a straight condition, said dimensions being taken in the same direction in a common plane containing said substantially straight axial line, said larger dimension portions being dimensioned such that when said elastic band is stretched along its length and is at least partially engaged in an opening defined by at least one orthodontic



bracket means, said larger dimension portion abuttingly engages at least a portion of said at least one engaging and retaining surface to substantially prevent the stretched elastic band from relaxing, and when knotting the ends thereof, at least two of said larger dimension portions engaging each other to substantially prevent the stretched elastic band from relaxing.

3,961,422

STOP DEVICE FOR ENDODONTIC INSTRUMENTS

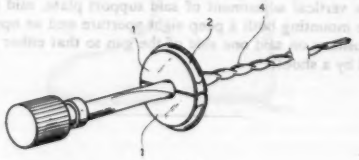
Francesco Riitano, Corso Umberto 1° (Palazzo Tlani), Soverato (Catanzaro), and Vincenzo Spina, Via Fogliano,, 35 Rome, both of Italy

Filed Nov. 4, 1974, Ser. No. 520,953

Claims priority, application Italy, Nov. 8, 1973, 4922/73

Int. Cl.² A61C *5/02*

U.S. Cl. 32—57 **4 Claims**



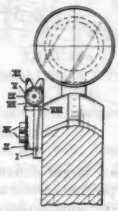
1. The combination of an elongated dental instrument for use in an endodontic operation; and a stop for limiting the depth of penetration of the elongated dental instrument during the endodontic operation; said stop comprising: a diametrically bifurcated disc having a central instrument-receiving bore extending therethrough in a direction generally normal to the plane of the disc and dimensioned for snugly receiving the elongated dental instrument, and having a circumferentially grooved outer lateral surface, said bifurcated disc comprising two disc halves disposed in use about the elongated dental instrument with the elongated dental instrument extending through the instrument-receiving bore and clamped between the two disc halves, and positioned in use along the elongated dental instrument to limit the depth of penetration thereof; and a resilient snap-ring dimensioned to fit within the circumferentially grooved lateral surface and secure the two disc halves in position with the elongated dental instrument clamped therebetween.

3,961,423

SECONDARY SIDE MOUNTED GUN SIGHT AND ARRANGEMENT, FOR AUXILIARY USE WITH A PRIMARY TOP MOUNTED TELESCOPE RIFLE SIGHT

Matthew J. Hrebar, P.O. Box C, Beaverdale, Pa. 15921

Filed Feb. 18, 1975, Ser. No. 550,424
Int. Cl.² F41G 1/02, 1/16, 1/38, 11/00
U.S. Cl. 33—258 2 Claims



1. A gun sight comprising: a front sight assembly, said front sight assembly including a support means mounted on one side of a gun with a front sighting element thereon, said front sighting element being supported by said support means to one side of the gun; a rear sight assembly, said rear sight assembly including a support plate having at least one slot therein, a clamp means having fastening means extending through said slot and fastening said clamp means to said one side of the gun to clamp the support plate to said one side, said slot extending in the vertical direction a sufficient distance to allow vertical adjustment of said support plate, said support plate mounting both a peep sight aperture and an open sight in positons on said one side of the gun so that either may be used by a shooter.

3,961,424

PROCESS FOR FREEZING COFFEE EXTRACT PRIOR TO LYOPHILIZATION

Byron E. Elerath, Mountain Lakes, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Filed Aug. 28, 1975, Ser. No. 608,417
Int. Cl.² F26B 5/06
U.S. Cl. 34—5 11 Claims

1. A process for producing a dark colored freeze-dried coffee which comprises:

a. producing a liquid coffee extract,

b. mixing the coffee extract in a liquid refrigerant wherein the liquid refrigerant is maintained at a temperature between about 15°F. to the ice point,

c. allowing the coffee extract to reach temperature equilibration with the refrigerant of step (b) and remain so for at least 4 minutes in order to permit the growth of large ice crystal structures, and thereafter,

d. cooling the coffee extract/liquid refrigerant mix to a temperature below the eutectic point of the coffee extract,

e. separating the frozen coffee extract from the liquid refrigerant, and

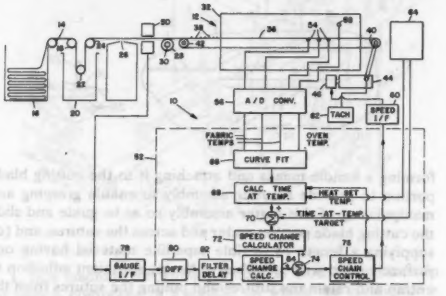
f. freeze drying the frozen coffee extract.

3,961,425

TEMPERATURE CONTROL SYSTEM FOR TEXTILE TENTER FRAME APPARATUS

S. Keith Swanson, Saratoga, and David E. Stepner, Cupertino, both of Calif., assignors to Measurex Corporation, Cupertino, Calif.

Filed June 18, 1975, Ser. No. 587,952
Int. Cl.² F26B 3/04
U.S. Cl. 34—25 8 Claims



1. In a tenter frame for supporting fabric to be heat treated to set the fabric fibers and thereby minimize future shrinkage including means for driving the tender frame and the fabric supported thereby in a linear direction; means for controlling the driving means of the tenter frame, and an oven housing around said tenter frame including means therein for heating and drying the fabric on the moving tenter frame, an automatic control system for the tenter frame comprising:

means for measuring the temperature of the moving fabric on the tenter frame within said housing and the bulk air temperature within said housing;

means for measuring the actual speed of the tenter frame;

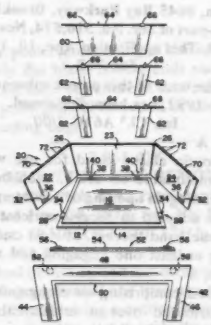
computer means responsive to said temperature measuring and speed measuring means for computing a predicted time-at-temperature value for the fabric within said tenter frame, and for comparing it with a preselected target value for heat set temperature and time-at-temperature to provide output control signals; and means extending from said computing means and connected to said drive means for utilizing said output control signals to change its speed and thereby achieve said target value.

3,961,426

PORTABLE STAGE ASSEMBLY

Brad Wallace, 7941 Broughton St., Sarasota, Fla. 33580

Filed June 3, 1974, Ser. No. 476,094
Int. Cl.³ G09B 19/00
U.S. Cl. 35—16 6 Claims



1. A model stage assembly of the type utilized to create a predetermined set design, said stage assembly comprising:

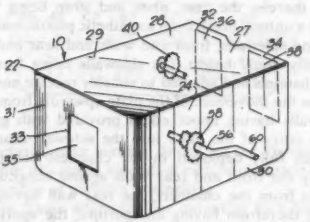
stage means comprising a substantially flat, planar configuration, housing means connected to said stage means and disposed contiguous to at least a portion of the periphery of said stage means, first connector means disposed in interconnecting relation to said stage means and said housing means, said first connecting means including a magnetic element and a metallic plate both interconnected between said stage means and said housing means, said first connector means further comprising a tit means and an aperture means also interconnected between said stage means and said housing means, said tit means disposed in aligned relation with said aperture means and engaged therein when said housing means is mounted on said stage means, said stage means further including floor means; backdrop means disposed in cooperative relation to said housing means and said floor means and facing means disposed adjacent to the viewing front of said stage assembly, whereby replicas of intended stage arrangements can be determined upon operative positioning of said stage assembly, said housing means comprising three wall elements each comprising a substantially flat, planar configuration and each being pivotally attached in successive relation and thereby disposable in foldable, substantially overlapping relation to one another, said three wall elements mountable about three consecutively positioned peripheral portions of said stage means and disposed in substantially perpendicular relation to the plane of said stage means, said facing means mounted along a front peripheral portion of said stage means in substantially interconnecting relation to free ends of said interconnected three wall elements comprising said housing means; orienting means comprising a plurality of notches disposed in substantially equidistant spaced relation along the upper longitudinal edge of each of two of said three wall elements which are operatively disposed relative to one another, support means connected in supported relation at opposite ends thereof to said two oppositely disposed side wall elements, said support means disposed to position opposite extremities thereof in correspondingly positioned notches on each of said two oppositely disposed side wall elements respectively; attachment means movably mounted along the length of said support means, said backdrop means having one end thereof removably connected to said attachment means and thereby disposed in downwardly extending, suspended relation from said support means, and in substantially surrounding relation to said three wall elements, said backdrop means disposed relative to said stage means and said three wall elements so as to be viewable through said facing means.

3,961,427

DEVICE FOR VIEWING THREE DIMENSIONAL PICTURES

Robert Smith, Bethpage, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed June 23, 1975, Ser. No. 589,661
Int. Cl.² G09B 19/22
U.S. Cl. 35—29 A **6 Claims**



1. A device for exhibiting three dimensional pictures, which comprises:

a. a housing having an internal chamber therein, a base, a pair of upwardly extending sidewalls, an upwardly extending rear wall, an upwardly extending front wall, a top cover, said rear wall having two apertures therethrough, and said front wall having a hole therethrough;

b. transparent windows affixed across said apertures and said hole;

c. three drums contained in said chamber, two said drums aligned with said apertures, and one said drum aligned with said hole;

d. two of said drums mounted on a first horizontal shaft journaled for rotation in a first pair of bearing blocks affixed in said sidewalls;

e. a third said drum mounted on a second horizontal shaft journaled for rotation in a second pair of bearing blocks affixed in said sidewalls;

f. means for rotation of said shafts and said drums;

g. a plurality of panels affixed to the outside peripheries of each said drums, said panels extending outwardly from said peripheries of said drums;

h. rear views of said pictures adapted to be in one set of panels affixed to one said drum;

i. front views of said pictures adapted to be received in another set of said panels affixed to said second drum; and

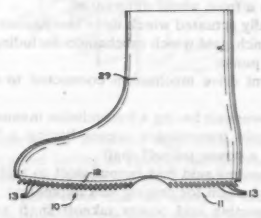
j. side views of said pictures adapted to be received in another set of said panels affixed to said third drum.

3,961,428

MUD RESISTANCE ELASTOMER

James Sidles, Richfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 173,883, Aug. 23, 1971, abandoned. This application Feb. 19, 1975, Ser. No. 550,976
Int. Cl.² A43B 13/04, 23/28
U.S. Cl. 36—32 R **6 Claims**

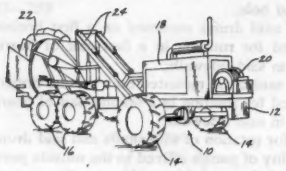


1. In a ground contacting element which covers substantially the entire bottom surface of a boot, overshoe, shoe or the like, a resilient body adapted to fixedly be secured to the base of an overshoe, said resilient body having a sole portion and a heel portion, said heel and sole portions having a plurality of transversely extending flexible fins, said heel portion being at the rear of said overshoe and said toe portion being at the forward of said overshoe, said fins on said heel portion comprising a first group extending downwardly and rearwardly from said resilient body, said fins on said sole portion comprising a second group extending downwardly and forwardly from said resilient body, the respective fins of said first group have respective front and rear surface portions that are parallel to each other and parallel to adjacent faces of adjacent fins in said first group, the respective fins of said second group have respective front and rear surface portions that are parallel, all of said fins being longitudinally extending, linearly straight and of uniform width for the entire length and height thereof, and said fins of each group being cooperative with adjacent fins in their said respective groups defining grooves therebetween.

3,961,429
EXCAVATING DEVICE

Stanley L. Brown, R.R. No. 1, Lenox, Iowa 50851

Filed Jan. 6, 1975, Ser. No. 538,897
Int. Cl.² E02F 5/02
U.S. Cl. 37—80 R 2 Claims



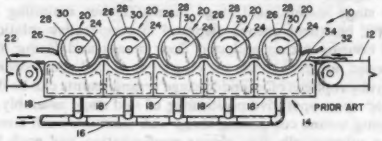
1. An excavating device comprising:
a frame having forward and rearward ends and front and rear wheels,
a winch mounted on said frame;
an excavating implement mounted on said frame for engaging and excavating the ground;
a hydraulically actuated wheel drive mechanism drivingly connected to said front and rear wheels for causing movement of said frame across the ground,
said wheel drive mechanism comprising a hydraulic wheel pump drivingly connected to a hydraulic wheel motor, said wheel motor being drivingly connected to a gear box having two output shafts, means connecting one of said output shafts to said front wheels and the other of said output shafts to said rear wheels,
said connecting means comprising a chain and sprocket mechanism driven by said one output shaft, an elongated straight drive shaft connected to and driven by said chain and sprocket mechanism, said straight shaft extending forwardly and being drivingly connected to said front wheels by a front wheel differential;
a hydraulically actuated winch drive mechanism connected to said winch, said winch mechanism including a hydraulic winch pump;
an implement drive mechanism connected to said implement;
a central power unit having a transmission means connected thereto, said transmission means having a first output shaft and a power takeoff shaft;
means connecting said first output shaft to said implement drive mechanism for driving said implement;
means connecting said power takeoff shaft to both said wheel pump and said winch pump, and
separate control means associated with said winch pump and said wheel pump for individually controlling the speed at which said wheels and said winch are driven.

3,961,430
PNEUMATIC PAD AND ROLL COVER FOR IRONING ROLLS ON INDUSTRIAL IRONERS

Dan D. Mazzolla, 2464 Raleigh Drive, York, Pa. 17402

Continuation-in-part of Ser. No. 487,020, July 10, 1974, abandoned. This application Mar. 7, 1975, Ser. No. 556,100
Int. Cl.² D06F 71/36
U.S. Cl. 38—66 9 Claims

1. A pneumatic pad and roll cover assembly for use upon rotatable ironing cylinder members of an industrial ironing machine comprised of an initially substantially flat flexible pneumatic member having a pair of similar impermeable elastic walls and said pneumatic member also having opposite ends and a length and width adequate to substantially circumferentially and longitudinally envelope said ironing cylinder members, means to secure said opposite ends of said pneumatic member together when extended around said cylinder, a flexible substantially inelastic cover member having opposite ends and substantially circumferentially and longitudinally enveloping said pneumatic member when extended about an ironing cylinder, and means to connect the opposite ends of said cover member in circumferential and longitudinal cylindrical envelopment about said pneumatic member when mounted upon said ironing cylinder to restrict the expansion of said pneumatic member to a pre-determined circumferential dimension, whereby when said pneumatic member is inflated with gas under a limited pressure said pneumatic

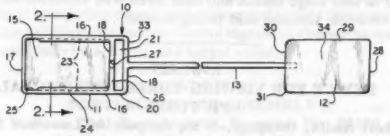


member is elastically distended radially inward to compressively and frictionally engage the longitudinal outer circumference of said ironing cylinder member with one wall of said pneumatic member and said pneumatic member also is distended radially outward to frictionally engage the longitudinal circumferential cover member with the opposite wall of said pneumatic member, thereby being adapted to provide an ironing cylinder having a compressible and yieldable pressure surface throughout the entire circumference of said cylinder.

3,961,431
LUGGAGE TAG

Robert E. Kalenian, Chicago, Ill., assignor to Conversion Caddy Co., Skokie, Ill.

Filed Sept. 22, 1975, Ser. No. 615,799
Int. Cl.² G09F 3/14
U.S. Cl. 40—21 R 4 Claims

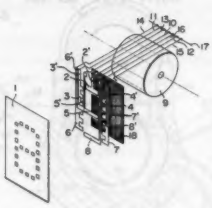


1. A luggage tag comprising an elongated strap for fastening the tag to luggage, the strap having attached at one end a case body adapted to receive an identification label and at the other end a plate adapted for closing the case and retaining the label therein, the case, plate and strap being integrally formed as a unitary blank from a synthetic plastic material, the case having sidewalls, front end walls and rear end walls of substantially equal height, the sidewalls being formed with internal channels and adapted to slidably receive and thereafter confine the movement of the plate upwardly from the case, the sidewalls having upper edges provided with grooves to assist the entry of the plate into the sidewall channels, the plate when fully deployed in the channels being retained therein by the front and rear walls against longitudinal displacement from the channels, the rear wall having a ledge extending therefrom having an aperture, the aperture being dimensioned to allow the passage of the plate therethrough, the strap being bent to form a loop as the plate is passed through the aperture and slid inside the channels, thereby closing the case when fully deployed therein and providing a strap loop for fastening the tag to a piece of luggage.

3,961,432
DIGITAL INDICATOR

Yasuo Wakabayashi, 1362-293, Hisaki, Zushi, Kanagawa, Japan

Filed Oct. 25, 1975, Ser. No. 518,083
Claims priority, application Japan, Oct. 26, 1973, 48-119836
Int. Cl.² G09F *11/00*
U.S. Cl. 40—28 C **11 Claims**

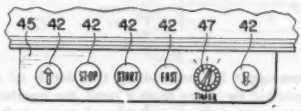


1. A segment type digital indicator, comprising:
a masking sheet having an exposed face of one color and apertured areas arranged to represent at least seven digit segments;
shutter plates movably mounted in a common plane behind and parallel to said masking sheet, each of said shutter plates having at least one segment shutter portion of said one color for covering one of said apertured areas representing a digit segment;
means defining a planar surface of another color contrasting with said one color mounted immediately behind said shutter plates; and
operating means including aligned drive elements movable in parallel paths and independently movable members connecting said drive elements with said shutter plates, respectively, said drive elements being selectively operative to move said shutter plates in said common plane between covering and uncovering positions with respect to said apertured areas of said masking sheet to selectively expose said surface of contrasting color through said apertured areas representing one or more of said digit segments to form an alphanumeric character.

3,961,433
PICTURE POSTER VIEWER

Errol D'Cruz, and June D'Cruz, both of Bramalea, Canada, assignors to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed June 21, 1974, Ser. No. 481,653
Int. Cl.² G09F *11/28*
U.S. Cl. 40—31 **2 Claims**

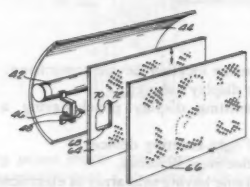


1. A picture poster viewing device for the viewing through an aperature of a single individual picture on a strip imprinted with a plurality of pictures comprising,
a picture frame adaptable for mounting to a flat surface, said frame formed with an open viewing aperature,
a strip of flexible sheeting upon which a plurality of pictures are imprinted, with the opposed ends of said strip mounted upon a pair of rollers, rotatably mounted in spaced parallel orientation, each located on an opposite side of the viewing aperature from the other,
reversible motorized means to rotate both rollers so as to wind the strip upon one roller and unwind the strip upon the other roller,
said motorized means rotatably linked to a drive shaft, with each roller fixed to an individual roller shaft,
each roller shaft fitted with a first bevel gear, about the boss of which flat frictional spring means are externally wound to serve as a clutch brake, each said first bevel gear being individually meshed with a second bevel gear,
each of said second bevel gears being joined to the drive shaft by an individual clutch assembly incorporating a coil spring joining the drive shaft to the clutch assembly in constant tension and a compression spring biasing the respective clutch assembly against each of the second bevel gears, with
the frictional spring means about the boss of each of the first bevel gears being wound in an opposite direction from the frictional spring means wound about the other first bevel gear, so that in a given direction of rotation of the drive shaft, one of the first bevel gears is under braking torque causing the clutch assembly of the associated second beveled gear to slip with relation to the drive shaft, and retarding the motion of the roller associated with said first bevel gear.

3,961,434
ANIMATED SIGN

Edward A. Sampon, Milwaukee, Wis., assignor to Everbrite Electric Signs, Inc., South Milwaukee, Wis.

Filed Nov. 18, 1974, Ser. No. 524,595
Int. Cl.² G09F *13/34*
U.S. Cl. 40—106.53 **5 Claims**



1. An illuminated animated sign comprising a source of light, a first panel having an opaque background and an array of transparent dots of like size thereon, a second panel having an opaque background and an array of transparent dots thereon of substantially the same size as the dots of the first panel, said panels being in superimposed relationship on one side of said light source, one of said panels being mounted for reciprocal movement along a straight line relative to the other panel, the array of transparent dots on the first panel being arranged in a square grid pattern, the array of transparent dots of said second panel being positioned along diagonal lines, each of said diagonal lines being the diagonal of rectangles on said first panel, each of which rectangles is formed by two adjacent squares which are defined by six dots, each diagonal line of dots on said second panel is at an angle of approximately 26° with respect to the long sides of said six dot rectangles of the first panel the transparent dots of said second panel being arranged to form a plurality of patterns which are periodically illuminated when the transparent dots of the second panel register with the transparent dots dots of the first panel, and means for reciprocally moving one of said panels in such a direction that the transparent dots of the second panel move on the beforementioned diagonal lines with respect to the transparent dots which form said grid pattern on said first panel, whereby a maximum number of dots on a diagonal line of said second panel is accommodated between the diagonally opposite corner dots of each of said six dot rectangles of said first panel in positions where they may be moved in sequence along said diagonal lines into registration with one of said

corner dots without overlapping any of the other dots defining a six dot rectangle, there are at least three transparent dots on said second panel positioned on a diagonal line between diagonally opposite transparent dots of said six dot grid pattern on said first panel, the transparent dots on said second panel being arranged to form at least three different patterns which are periodically illuminated in sequence as said one panel is reciprocated with respect to the other panel.

3,961,435

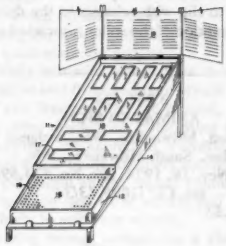
CUSTOMER-OPERATED MERCHANDISE LOCATING DEVICE

Dan L. Keckler, 5411 Taylor St., Davenport, Iowa 52806

Continuation of Ser. No. 542,641, Jan. 20, 1975, abandoned, Division of Ser. No. 451,594, March 15, 1974, abandoned. This application Nov. 21, 1975, Ser. No. 634,130

Int. Cl.² G09F *13/04*

U.S. Cl. 40—130 R **1 Claim**



1. A merchandise locating device comprising:

a rectangular display cabinet,

a light-transmitting display panel having a floor plan thereon,

a plurality of light-emitting devices,

an array of electrical switches,

a mounting frame having said array of electrical switches on one end portion thereof and a grid extending across the other end portion thereof, said grid providing closely spaced openings adapted to receive said light-emitting devices individually at selected points on said grid, each of said light-emitting devices being readily removable from any of said openings and positional in another of said openings, conductive means interconnecting said switches and said light-emitting devices to provide selective illumination of said light-emitting devices,

first supporting members along the inside walls of the sides of said cabinet adapted to receive said light-transmitting display panel as a drawer insertable from one end of said cabinet, the upper surface of said light-transmitting display panel being visible while the panel is normally inserted in said cabinet,

second supporting means along inside walls at positions below said first supporting members adapted to receive said mounting frame as a drawer in a normal position for locating said grid a short distance below said light-transmitting display panel, said grid being coextensive with said floor plan while said light-transmitting display panel and said mounting frame are in their respective normal positions in said cabinet, and

third supporting means within the upper inside edge of said sides of said display cabinet for supporting said mounting frame in a temporary position above said light-transmitting panel to facilitate accurate positioning of said light-emitting devices, each opening of said grid being closest to the same respective point on said floor plan whether said grid is mounted either temporarily above or normally below said floor plan.

3,961,436

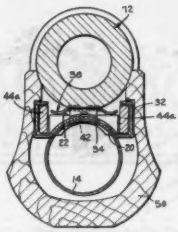
FORE-END AND BARREL SUPPORT

Leonard J. Hagen, Herkimer; James S. Martin, and Clark B. Workman, both of Mohawk, all of N.Y., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Mar. 28, 1975, Ser. No. 563,107

Int. Cl.² F41C *27/00*

U.S. Cl. 42—75 B **10 Claims**



1. In a firearm having a receiver with an attached magazine tube assembly projecting therefrom, an action bar assembly slidably mounted on said magazine tube assembly, a removable barrel assembly mounted in said receiver directly above and parallel to said magazine tube assembly, and a fore-end positioned over said action bar assembly and said magazine tube assembly, the improvement comprising a support member positioned between said barrel assembly and said magazine tube assembly, means attaching said support member to said action bar assembly to permit sliding movement of said action bar assembly therein, said support member having means thereon for co-operating with corresponding means on said fore-end to support said fore-end on the firearm, and spring means on said support member having a predetermined amount of resiliency for maintaining a firm support for said barrel assembly on said magazine tube assembly regardless of variations in manufacturing tolerances of the barrel assembly, the magazine tube assembly, and the receiver.

3,961,437

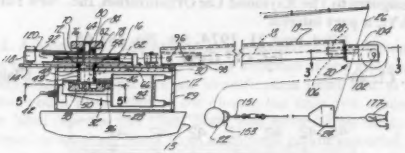
DOWNRIGGER

Gerald F. Lewis, 1850 Columbia, Berkley, Mich. 48072

Filed Feb. 3, 1975, Ser. No. 546,207

Int. Cl.² A01K *91/00*, *89/00*

U.S. Cl. 43—27.4 **17 Claims**



1. A downrigger for controlling the depth of a trolling weight suspended by a line from a boat, the combination of: a housing adapted to be supported on a boat, a shaft rotatably supported by said housing and extending vertically therefrom, a reel for receiving and dispensing line mounted on said shaft for rotational movement relative thereto on a generally vertical axis relative to the boat, an elongated arm supported relative to said housing and extending therefrom for swinging movement in a full arc about said vertical axis and relative to the housing, guide means at the free end of said arm for receiving the line from said reel and guiding the line away from the boat, motor means for rotating said shaft, and clutch means drive connecting said shaft to said reel and being selectively adjustable between positions permitting free rotation of

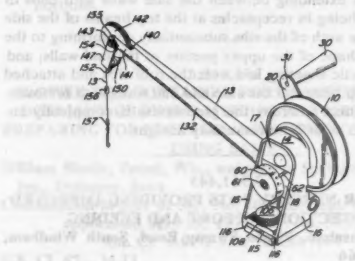
said reel relative to said shaft and releasably connecting said reel to said shaft for rotation therewith and for release therefrom in response to a selected load on said weight.

3,961,438

TROLLING APPARATUS

Walter J. Henze, and San Thein, both of Philadelphia, Pa., assignors to Penn Fishing Tackle Mfg. Co., Philadelphia, Pa.

Filed Mar. 10, 1975, Ser. No. 556,552
Int. Cl.² A01K 97/00
U.S. Cl. 43—27.4 **10 Claims**



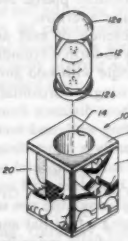
1. Trolling apparatus for fishing which comprises
a base assembly comprising a base,
a shaft member carried by said base and free to rotate in one direction with respect to said base,
a handle fixed to said shaft member for rotating said shaft member,
a reel for supply of line rotatably mounted on said shaft member and normally free to rotate on said shaft member,
an adjustable drag assembly carried by said shaft member and interposed between said shaft member and said reel,
a boom detachably secured to said base and having a pulley for carrying the line, and
a bracket assembly attached to said boom and receiving the line from said pulley.

3,961,439

PICTORIAL AMUSEMENT DEVICE

Matthew A. Moustakas, Mercerville, N.J., assignor to CBS Inc., New York, N.Y.

Filed Aug. 21, 1975, Ser. No. 606,664
Int. Cl.² A63H 3/16
U.S. Cl. 46—22 **6 Claims**



1. A pictorial amusement device comprising:
a generally cubical block having four side surfaces and top and bottom surfaces, said side surfaces having representations thereon of a human body from the shoulders down in four different attires depicting different activities, and having a central socket in said top surface of predetermined depth, and
a cylindrical block of length about twice the depth of said socket and having a diameter so as to be loosely received in said socket, approximately half of the length of the outer surface of said cylindrical block from one end thereof having a representation thereon of a human head with a first facial expression and the other half of the length of the block from the other end thereof having a representation thereon of a human head with a second facial expression, the face of one of the heads being inverted relative to the other face,
said cylindrical block being reversibly insertable in said socket so as to depict, in cooperation with the representation on one of the side surfaces of the cubical block, a human with either said first or said second facial expression, and rotatable in the socket so as to associate the selected facial expression with a selected one of the four depicted bodies.

3,961,440

SPRING PRIME MOVER UNIT

Shigeru Saito, No. 6-4, 2-chome, Kuramae, Taito, Tokyo, Japan

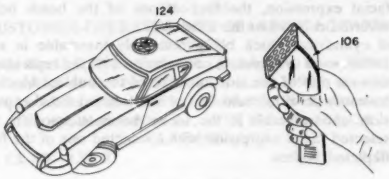
Filed Aug. 28, 1975, Ser. No. 608,539
Int. Cl.² A63H 17/00
U.S. Cl. 46—206 **3 Claims**

1. A spring prime mover unit, comprising a spring prime mover, a transmission gear, a plurality of connectors, a mechanism frame and a box frame; said spring prime mover comprising a spring and a pair of drums, and set outside the mechanism frame; one of said drums being fixed to the front end of a main shaft and the other of said drums being mounted on a subsidiary shaft beneath said upper drum; said spring being fixed to the circumferences of each drum by both ends and having power of winding from the upper drum to the lower drum; said transmission gear comprising the main shaft, a square shaft, a rotatable shaft and an intermediate transmission gear; said main shaft passing through the mechanism frame in front and in the rear, journaled in said mechanism frame and equipped with the upper drum as described above and with a handle having an adjustor at the rear end, and said upper drum being fitted with a rotatable connector at the front; said square shaft passing transversely through the upper portion of the mechanism frame, journaled in said mechanism frame and being engaged with the main shaft by a worm and a worm gear, and both ends of the square shaft becoming rotatable connectors; said rotatable shaft passing transversely through the lower portion of the mechanism frame and being fitted with a pair of wheels at both ends and engaged indirectly with the main shaft by the intermediate transmission gear; said mechanism frame being fitted with a stopper to stop a winding back motion of the spring; and said box frame covering all the above members and being fitted with a connector at the top, with tubular side connectors at both sides in which both ends of the square shaft are housed without contact and with a semicircular ring connector at the lower portion of the back, and having an aperture for the connector of the main shaft and a pair of slots from which the wheels of the rotatable shaft are projected downward by halves.

3,961,441
SONIC RESPONSIVE TOY VEHICLE STEERING SYSTEM

Akihiro Sato, No. 9-10 Tateishi 7-chome, Katsushika, Tokyo, Japan

Filed Mar. 7, 1975, Ser. No. 556,328
Claims priority, application Japan, Apr. 4, 1974, 49-38256
Int. Cl.² A63H 17/36
U.S. Cl. 46—256 11 Claims

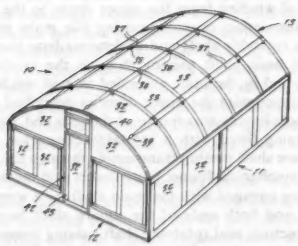


1. A toy vehicle and remote control steering system, comprising:
a chassis;
rear wheels, and means mounting said rear wheels to said chassis for rotation;
front wheels, and means mounting said front wheels to said chassis for rotation and turning;
propulsion means mounted within said chassis;
means operatively connecting said rear wheels and said propulsion means to rotate said rear wheels to propel the vehicle along a surface;
means for sensing predetermined sound waves and temporarily connecting said propulsion means to said front wheel mounting means, thereby turning said front wheels to steer said vehicle; and
means remote from the vehicle for generating said predetermined sound waves.

3,961,442
PORTABLE GREENHOUSE

Martin F. Carter, Rte. 4, Box 374, Kingston, Tenn. 37763

Filed July 29, 1974, Ser. No. 492,467
Int. Cl.² A01G 9/00
U.S. Cl. 47—17 2 Claims

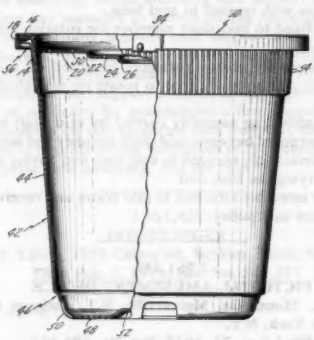


1. An inexpensive portable greenhouse capable of being easily disassembled for storage and thereafter quickly reassembled for use at any location, which comprises:
a pair of substantially parallel vertical side walls formed from a plurality of rectangular side sections, each side section having a top beam provided with a hole therethrough near each end, and each side section being joined to an adjoining section in an end-to-end relationship with a fastening member having releasable fasteners passing through the holes in the top beams of adjoining sections, the fasteners being smaller in diameter than the holes;
a pair of vertical end walls attached with releasable fasteners to terminal side sections and having a rectangular lower portion and an upwardly arched upper portion;
a closely fitting pedestrian door in at least one end wall for ingress and egress to the greenhouse;
a clear plastic sheeting individually covering and attached to each of the side sections, the end walls and the door;
a plurality of angular braces substantially equally spaced along the side walls connected between the top beams of the side sections and ground, the braces including length adjusting means to permit adjusting the side walls to vertical orientation;
a plurality of upwardly arched, substantially equally spaced roof ribs extending between the side walls with ends of the ribs being in receptacles at the top beams of the side walls, the arch of the ribs substantially conforming to the arched shape of the upper portion of the end walls; and
a clear plastic sheeting laid over the roof ribs and attached to the top beams of the side and end walls with removeable fasteners whereby the greenhouse is completely enclosed so as to be substantially airtight.

3,961,443
COVER FOR NURSERY POTS PROVIDING IMPROVED PROTECTION, SUPPORT AND FEEDING

Charles J. Insalaco, Pigeon Swamp Road, South Windham, Conn. 06266

Filed May 5, 1975, Ser. No. 574,650
Int. Cl.² A01G 13/00
U.S. Cl. 47—32 6 Claims



1. A cover for a nursery pot adapted to protect and support nursery stock contained therein and through which the stock can be fed and watered, comprising
an annulus of thin, flexible plastic material having a centrally located circular aperture,
the outside circumference of said annulus being curved smoothly upwardly to form a bounding wall which makes a slightly obtuse angle with said annulus,
a rim portion comprising a horizontal wall extending radially outwardly a short distance from the topmost extension of said bounding wall, and including a vertical wall extending downwardly a short distance from the outermost extension of said horizontal wall, said rim portion forming with said bounding wall an inverted U which is adapted to fit snugly over the rim of a nursery pot,
said annulus comprising a first flat annular portion lying in a plane extending radially inwardly from the bottom of said bounding wall toward said aperture and terminating short thereof, and a second flat annular portion extending radially inwardly from the inner circumference of said first annular portion, the outer circumference of said second annular portion being joined to the inner circumference of said first annular portion by a short substan-

tially vertical curved wall, said second annular portion being in a plane slightly below the plane of said first annular portion,

a short, curved lip extending downwardly and inwardly from the inner circumference of said second annular portion and terminating at the outer circumference of said aperture,

a slit extending the entire radius of said cover and permitting the portions of said cover on either side of said slit to be slightly separated and allowing said cover to be mounted on or removed from a pot containing nursery stock,

and a plurality of small holes in said first and second annular portions.

3,961,444

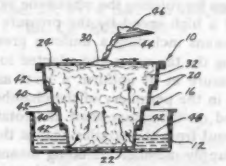
FLOWER POT CONTAINER FOR PLANT SEEDS IN A DORMANT GROWING MEDIUM AND METHOD OF PREPARING FOR STORAGE AND SHIPMENT AND THEN USING SAME

William Skaife, Potosi, Wis., assignor to Springtime Flowers, Inc., Dubuque, Iowa

Continuation-in-part of Ser. No. 503,803, Sept. 6, 1974. This application May 15, 1975, Ser. No. 577,863

Int. Cl.² A01G 9/02; B65D 7/24

U.S. Cl. 47—34.11 **12 Claims**



1. A flower pot container and growing medium comprising, a flower pot container including

a plurality of telescopically interconnected sections and a top wall connected to the uppermost section,

compressed peat moss filling a portion of the maximum capacity of said container,

said container having sufficient capacity to hold said compressed peat moss upon it being expanded by the application of water, and

said container being self adjusting to conform to the size of the peat moss in its compressed and expanded states whereby said peat moss when wetted rising and forcing said top wall upwardly moving said sections from a collapsed to an expanded state.

3,961,445

PLANT HOLDER AND PROCESS FOR PRODUCING THE SAME

David Rack, Freilassing, Germany, assignor to Plana-GmbH, Luxembourg, Luxemburg

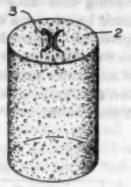
Filed Feb. 12, 1974, Ser. No. 442,115

Claims priority, application Germany, Feb. 16, 1973, 2307732

Int. Cl.² A01G 9/02

U.S. Cl. 47—37 **10 Claims**

1. A plant holder comprising a substrate mixture of peat, humus, loam, and fertilizer, with reticulated flakes of polyurethane foam carrying said substrate mixture, said mixture and flakes being bound together by an elastic binder, said binder



being present in an amount sufficient to produce a coherent yet porous mass.

3,961,446

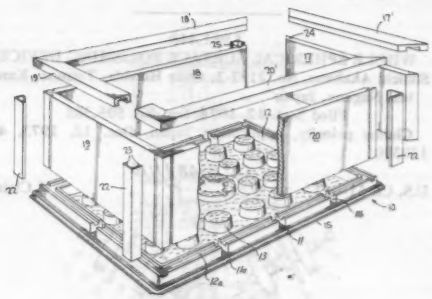
BALANCED BOTANICAL GROWTH CONTAINER

Stanley I. Mason, Jr., and James E. Richardson, both of Weston, Conn., assignors to Simco, Inc., Weston, Conn.

Filed May 19, 1975, Ser. No. 578,425

Int. Cl.² A01G 9/00

U.S. Cl. 47—38 **18 Claims**



1. A plant growth container eliminating plant overwatering and reducing root rot comprising:

a water impermeable base having:

an inner channel substantially defining the periphery of the growth container, capable of receiving and supporting a soil containment means,

a series of root control means located on the base surface within the inner channel, said root control means extending upwardly from said base to a predetermined height defining an upper plane, and

an outer water/gas transmission channel substantially defining the periphery of the base having a plurality of channels in communication with the root control means,

the bottom of the inner channel and the upper plane of said root control means being generally higher than the top of the water/gas transmission channel, and

separate soil containment means comprising panels which fit into the inner channel thereby defining a container suitable for growth.

3,961,447

PRISON DOOR LOCKING MECHANISM

Francis T. Wolz, Joliet, Ill., assignor to Folger Adam Co., Joliet, Ill.

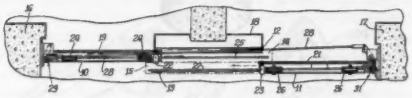
Filed June 13, 1975, Ser. No. 586,796

Int. Cl.² E05F 11/34

U.S. Cl. 49—362 **6 Claims**

1. For use with a prison door laterally movable across an opening defined by a doorway frame, a door locking mechanism comprising: a door-suspending carriage slidingly and laterally movable about the frame, said carriage having a transverse end latch plate; a rack bar; coupling means for

connecting said rack bar to said carriage and for providing limited relative movement therebetween; reversible rack bar drive means for moving said door-suspending carriage between open and closed positions; a cam carried by said rack bar; a locking dog pivotally mounted to the frame and having cam follower means for effecting pivotal locking dog movement between inner and outer positions in response to movement of said rack bar, said locking dog having a latch engageable with said latch plate when said dog is in said inner posi-



tion to lockably restrain carriage movement; spring means for urging said locking dog into said inner position; and bumper means for blocking movement of said carriage beyond a predetermined position adjacent said locking dog and corresponding to door closure; said locking dog having a protruding arm engaged by said rack bar upon movement thereof toward said arm and relative to said carriage when the latter is in said predetermined position to insure deadlock rotation of said locking dog to said inner position.

3,961,448

WHOLE SPHERICAL SURFACE POLISHING DEVICE

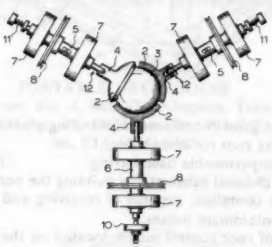
Shoichi Akahane, No. 2192-2, Oaza Hiraide, Tatsuno, Kamina, Nagano, Japan

Filed Sept. 12, 1974, Ser. No. 505,381

Claims priority, application Japan, Dec. 12, 1973, 48-139390

Int. Cl.² B24B *11/10*

U.S. Cl. 51—117 **5 Claims**



1. Apparatus for lapping a complete spherical surface on a body in one operation, comprising three shafts located in a plane and having axes intersecting at one point in said plane and being angularly displaced from each other by angles of 120°; three lapping cups mounted at one of the ends of said shaft at equal distances from said point, each of said cups having a spherical contact surface adapted to contact the body to be processed through an angle of less than 120°, said cups being respectively connected to said shafts for rotation therewith and one of said cups being immovably fixed to one of said shafts and the other cups being respectively connected to the other two shafts for a slight tilting movement about said one end; bearing means mounting said shafts for rotation and for movement in axial direction; biasing means connected to said other two shafts for urging said other two shafts and the cups connected thereto towards said point; means engaging the other end of said one shaft for adjusting the axial position thereof; and drive means connected to each of said shafts for driving the same respectively at different speeds of rotation so as to revolve a body contacted by said spherical contact surfaces and to lap the whole surface of said body to a perfect spherical shape.

3,961,449

GRINDING MACHINE FOR HOUSEHOLD USE

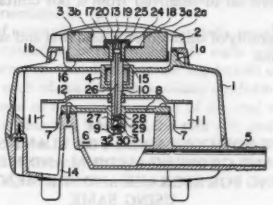
Minoru Ise, Osaka, Japan, assignor to Ise Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 27, 1975, Ser. No. 608,253

Claims priority, application Japan, Apr. 9, 1974, 49-106968[U]

Int. Cl.² B24B *3/36*

U.S. Cl. 51—128 **5 Claims**



1. A grinding machine for household use comprising:

a rotary shaft vertically supported by an upper bearing and a lower bearing mounted on a housing, the rotary shaft having a small water passage extending vertically therethrough,

a whetstone mounted on the upper end of the rotary shaft and disposed above the housing, the whetstone having a top surface serving as a grinding surface,

drive means for rotating the whetstone along with the rotary shaft at a high speed by the pressure of tap water, the drive means including a uniform pressure chamber for receiving the tap water and adapted to maintain its internal pressure at as uniform a level as possible, nozzles formed in the periphery of the chamber and an impeller mounted on the rotary shaft and rotatable by the water forced out from the nozzles against the impeller,

a water supply member including means for fastening the whetstone to the rotary shaft and having a T-shaped water channel communicating with the water passage of rotary shaft to form a water layer on the grinding surface during the rotation of the whetstone, and

urging means for applying the pressure of water in the uniform pressure chamber to the lower end of the rotary shaft supported by the lower bearing to raise the whetstone along with the shaft and for supplying water to the water channel of the water supply member through the water passage of the rotary shaft.

3,961,450

TWIST DRILL SHARPENING APPARATUS

Kenneth Kay Knaell, 307 S. Cassingham Road, Columbus, Ohio 43209

Filed Feb. 10, 1975, Ser. No. 548,822

Int. Cl.² B24B *3/26*

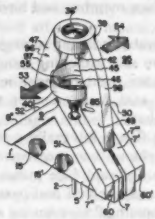
U.S. Cl. 51—219 R **12 Claims**

1. A twist drill sharpening apparatus for hand use and portable comprising a twist drill holder means, said twist drill holder means comprising adjacent flat faces at an angle to each other and forming a V-shaped member having a straight roof line at the intersection of said faces,

means for removably fastening the twist drill to said holder means in alignment at right angle to said roof line in a plane formed by said roof line and a line bisecting equally the angle formed by said faces, to position the drill with the cutting edges extending out from said faces to expose the cutting edges for sharpening by a sharpening means having a flat sharpening surface that is moved along each of said faces,

means for indicating the orientation of the twist drill in said drill holder means to place each of the twist drill cutting

edges in a desired position relative to the plane of said holder means faces, said indicating means being arranged to align said cutting edges at a predetermined angle with respect to said roof line, said indicating means comprising an index that can be aligned with a cutting edge of a twist drill, means on said indicating means for alignment with



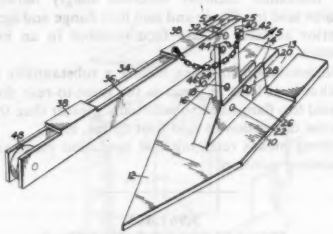
said roof line, to position said index at a predetermined angle with respect to said roof line, said index being oriented to position a twist drill at said predetermined angle that enables a sharpening means with a flat sharpening surface moving along each of said flat faces to sharpen each of the twist drill cutting edges.

3,961,451

GROUND ANCHOR

Jack L. McCain, 2160 Riverview St., Eugene, Oreg. 97201

Filed Apr. 29, 1974, Ser. No. 464,941
Int. Cl.² E02D 5/80
U.S. Cl. 52—163 **3 Claims**



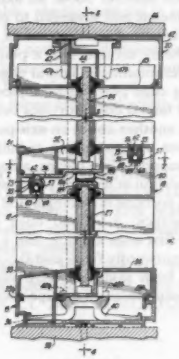
1. A ground anchor comprising
a. a blade having upper and lower surfaces and a sharpened front end arranged to penetrate the ground,
b. a first shank portion,
c. first pivot means connecting said first shank portion at one of its ends to said blade,
d. the axis of said first pivot means extending in a direction transversely of said blade,
e. a second shank portion,
f. second pivot means connecting one end of said second shank portion to the end of said first shank portion which is opposite from the pivot connection with said blade,
g. the axis of said second pivot means also extending in a direction transversely of said blade,
h. and releasable connectiong means engageable between said blade and said first shank portion and between said first and second shank portions,
i. said releasable connecting means in a first operative position including means rigidly locking said first and second shank portions in longitudinal alignment with each other and in longitudinal alignment with said blade to form a longitudinal extension of said blade in a stake-like structure,
j. said releasable connecting means in a second operative position including means rigidly locking said first shank portion parallel with and along said blade but allowing pivotal movement of said second shank portion a selected amount away from said blade but less than 90° therefrom,
k. said releasable connecting means in a third operative position including means rigidly locking said first shank portion at substantially a right angle relative to said blade and rigidly locking said second shank portion at substantially a right angle relative to said first shank portion extending substantially parallel with said blade and in the same direction as the sharpened end of the latter.

3,961,452

WALL CONSTRUCTION

S. Eugene Hubbard, and Lawrence F. Biebuyck, both of Niles, Mich., assignors to Kawneer Company, Inc., Niles, Mich.

Continuation of Ser. No. 401,460, Sept. 27, 1973, abandoned, which is a division of Ser. No. 279,066, Aug. 9, 1972, which is a continuation of Ser. No. 41,951, June 1, 1970, abandoned. This application Feb. 10, 1975, Ser. No. 548,681
Int. Cl.² E04B 5/52
U.S. Cl. 52—475 **5 Claims**



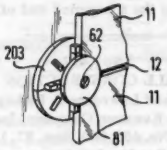
1. A wall construction including a through vertical mullion of one piece continuous tubular transverse cross-section having a pair of spaced apart opposite side walls with a glazing recess in at least one of said side walls and a horizontal member in end abutting relation against said one of said side walls, said horizontal member having a pair of longitudinally extending screw splines disposed on opposite sides of a glazing recess aligned with the recess in said side wall for receiving an edge portion of a wall panel, a pair of shear pin fasteners each having a threaded shank threaded into the end of one of the screw splines and having a head portion projecting laterally of said shank and spaced from said end of its respective screw spline, said fasteners each including an arcuate bearing portion between said head portion and shank providing the spacing between said head portion and the end of said horizontal member, said vertical mullion having spaced apart circular holes in said one side wall for receiving said head portions of said fasteners inserted through said holes until inside of said one side wall within said tubular cross-section with said arcuate bearing portions bottomed against lower portions of wall edges defined by said holes with said head portion bearing against the inside surface of said one side wall to secure said horizontal member together with said vertical mullion with adequate bearing support for said horizontal member.

3,961,453

SUPPORTS FOR CONSTRUCTIONAL OR BUILDING ELEMENTS

Paul Couwenbergs, Altfeldstr. 5, D-7500 Karlsruhe 21, Germany

Filed May 17, 1974, Ser. No. 471,150
Claims priority, application Germany, May 17, 1973, 7318461
Int. Cl.² E04C 1/10
U.S. Cl. 52—509 27 Claims



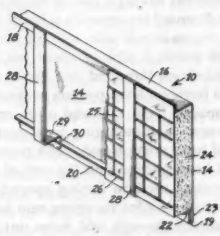
1. A constructional arrangement comprising: at least one constructional element, support plate means arranged to engage at least an edge or a corner joint of the constructional element, the support plate means having a first and second planar face, said second planar face having four dogs offset by 90° relatively to one another about an axis perpendicular to the support plate means and arranged to engage respectively between adjacent constructional elements, each of said support plate means being divided into a plurality of segmental support elements terminating in lateral edge portions engageable with adjoining edge portions of adjacent segmental support elements, said lateral edge portions being offset by about 90° relative to one another about an axis perpendicular to the support plate means and extending radially outwardly from the center of said support plate means, a dog is disposed along each lateral edge portion at half the radial extent thereof, each of said lateral edge portions including a first radially outwardly extending edge surface, a second edge surface extending transversely to the first edge surface, and a third edge surface extending radially outwardly from said second edge surface at a position spaced from said first edge surface, said second edge surface extending through a respective dog to divide the same.

3,961,454

PREFABRICATED INSULATION PANEL

Howard C. Adams, Apt. C-14, 120 Malibu Drive, Clarksville, Tenn. 37040

Filed Oct. 16, 1972, Ser. No. 297,782
Int. Cl.² E04D 1/00
U.S. Cl. 52—527 4 Claims



1. A prefabricated insulation panel adapted to be assembled in overlapping relationship with other like panels upon the outside of a support member of a heating apparatus comprising:

a. a planar face member made of imperforate sheet material having a top edge, a bottom edge, a front exterior surface, and a rear interior surface,

b. a top flange fixed to and projecting rearward from said top edge,

c. an attaching flange fixed to, and projecting upward above, said top flange, said attaching flange being spaced behind said face member and having a fastener opening therethrough,

d. a fastener member adapted to project through said opening and secure said attaching flange to and in front of a support member, said fastener member being substantially behind said face member when secured to said support member,

e. a connecting flange integrally connected to the bottom edge of said planar face member comprising a reversely bent extension of said face member and projecting upward immediately behind and parallel to said face member, said connecting flange having an upper end portion,

f. a foot flange fixed to and projecting rearward from the upper end portion of said connecting flange substantially parallel to said top flange, said foot flange comprising a bent extension of said connecting flange,

g. said foot flange terminating in a rear edge spaced substantially forward of said attaching flange to minimize heat conduction from the support member to the face member,

h. said foot flange being spaced above said bottom edge a distance substantially less than the distance between said foot flange and said top flange so that the lower portion of said face member between said foot flange and said bottom edge comprises a lapping portion,

i. said lappping portion being adapted to overlap and extend downward in front of the upper portion of the face member of a subjacent panel when said foot flange is seated upon the top flange of said subjacent panel,

j. an insulation member received snugly between and against said top flange and said foot flange and against the interior surface of said face member in an insulating position,

k. said insulation member having a substantially uniform thickness at least as great as the front-to-rear dimension of said top flange and substantially greater than the front-to-rear dimension of said foot flange, and

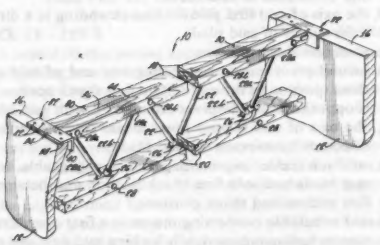
l. securing means retaining said insulation member in said insulating position.

3,961,455

TRUSS SUPPORT CONNECTOR

Dierk D. Peters, 5815 Highland, Yorba Linda, Calif. 92686

Continuation of Ser. No. 365,033, May 29, 1973, abandoned.
This application Oct. 21, 1974, Ser. No. 516,281
Int. Cl.² E04C 3/02
U.S. Cl. 52—693 24 Claims



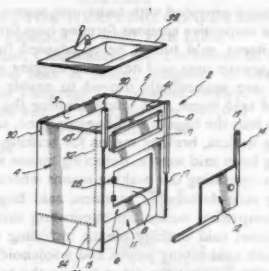
1. A truss arrangement for connecting a truss to a support surface, said arrangement comprising:

a top chord member;
a bottom chord member;
means for bearing substantially the entire load of one end of said truss, said means attaching only said top chord member to said support surface;
a plurality of horizontally spaced webs connecting said top chord member with said bottom chord member, each end of each of said webs horizontally spaced from said support surface and said attaching means;
means for connecting the ends of said webs to said top and bottom chord members;
each of said connecting means horizontally spaced from said support surface and said attaching means; and
an elongate strengthening member, constructed of material having substantially greater shear strength than the material forming said top and bottom chord members, extended along the end of said top chord member, one end of said strengthening member attached to said means for attaching said top member to said support surface, said strengthening member reducing shear and moment forces in said upper chord member by extending from said bearing means to a point beyond two of said spaced means connecting said web ends to said top chord adjacent said support surface, said strengthening member terminating short of the center of said upper chord member.

3,961,456
MOLDING FOR CABINETS AND DOORS

Glen D. Manlove, 1109 S. Sixth Ave., Arcadia, Calif. 91006, and Paul K. Ishler, 4334 Ridgewood, El Monte, Calif. 91734

Continuation-in-part of Ser. No. 313,775, Dec. 11, 1972. This application Aug. 19, 1974, Ser. No. 498,749
Int. Cl.² A47B *96/20*; E04C *2/38*
U.S. Cl. 52—716 10 Claims

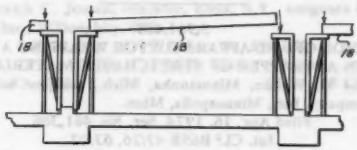


1. In a construction assembly such as cabinets, shelves, doors and the like formed from a plurality of members such as wood particle boards with at least one decorative surface and an enlarged locking head edge portion adjacent the decorative surface with at least one support shoulder adjacent the base of the locking head, the improvement comprising:
a flexible molding member assembly including an elongated flexible body member mounted over the enlarged locking head edge portion;
a pair of resilient relatively parallel leg portions movable relative to each other and extending from the body member, one leg portion being longer than the other and extending beyond the base edge portion of the locking head to overlap the decorative surface of the board member, the other shorter leg portion terminating in a shoulder abutting the support shoulder of the board member, the surface of the shorter leg portion being planar and not extending substantially beyond the plane containing the adjacent surface of the board member; and
means connected to the flexible body member between the outside surfaces of the parallel leg portions for gripping the locking head adjacent its base on either side.

3,961,457
METHOD OF BUILDING CONSTRUCTION

Waclaw P. Zalewski, 15 Goden St., Belmont, Mass. 02178

Filed May 2, 1974, Ser. No. 466,404
Int. Cl.² E04G *21/00*, *11/02*
U.S. Cl. 52—743 10 Claims

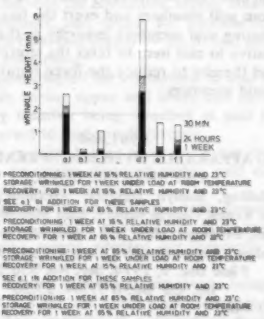


1. A method of building construction comprising the steps of:
1. erecting at horizontally spaced locations at least two forms for a setable, plastic material, said forms each defining a vertical support section and at least one horizontal support section;
2. positioning a prefabricated floor element on the horizontal support sections of said forms, said floor element partially spanning the horizontal distance between the vertical support sections of said forms;
3. placing a setable, plastic material in each of said forms, said material forming in each form a support element having a vertical portion and at least one horizontal portion with the horizontal portion forming a rigid connection with said floor element; and,
4. removing said forms after said plastic material has set.

3,961,458
PRETREATMENT, PACKING, STORING AND FINISHING TREATMENT OF TEXTILE MATERIAL PRODUCTS

Roshan Lal Shishoo, Askim, and Erik Malte Lundell, Molnlycke, both of Sweden, assignors to Svenska Textilforskningsinstitutet, Goteborg, Sweden

Filed June 25, 1975, Ser. No. 590,170
Claims priority, application Sweden, July 5, 1974, 7408871
Int. Cl.² B65B *31/02*, *25/20*
U.S. Cl. 53—21 FC 7 Claims


WRINKLE HEIGHT (mm)
30 MIN
24 HOURS
1 WEEK
a) b) c) d) e) f)
a) PRECONDITIONING: 1 WEEK AT 15% RELATIVE HUMIDITY AND 23°C
STORAGE: WRINKLED FOR 1 WEEK UNDER LOAD AT ROOM TEMPERATURE
RECOVERY: FOR 1 WEEK AT 15% RELATIVE HUMIDITY AND 23°C
b) SEE a) IN ADDITION FOR THESE SAMPLES
RECOVERY: FOR 1 WEEK AT 85% RELATIVE HUMIDITY AND 23°C
c) PRECONDITIONING: 1 WEEK AT 15% RELATIVE HUMIDITY AND 23°C
STORAGE: WRINKLED FOR 1 WEEK UNDER LOAD AT ROOM TEMPERATURE
RECOVERY: FOR 1 WEEK AT 85% RELATIVE HUMIDITY AND 23°C
d) PRECONDITIONING: 1 WEEK AT 85% RELATIVE HUMIDITY AND 23°C
STORAGE: WRINKLED FOR 1 WEEK UNDER LOAD AT ROOM TEMPERATURE
RECOVERY: FOR 1 WEEK AT 15% RELATIVE HUMIDITY AND 23°C
e) SEE d) IN ADDITION FOR THESE SAMPLES
RECOVERY: FOR 1 WEEK AT 85% RELATIVE HUMIDITY AND 23°C
f) PRECONDITIONING: 1 WEEK AT 85% RELATIVE HUMIDITY AND 23°C
STORAGE: WRINKLED FOR 1 WEEK UNDER LOAD AT ROOM TEMPERATURE
RECOVERY: FOR 1 WEEK AT 85% RELATIVE HUMIDITY AND 23°C

1. A method for pretreatment, packing, storing and finishing treatment of a textile material product, the pretreatment comprising reducing the moisture content of the product followed by enclosing the product in a package made from a material having low water vapor permeability, whereafter the greater portion of the air contained in the package is removed therefrom and the package moisture-proof-sealed, wherein the product before enclosure in the package is brought to a moisture equilibrium with air at a relative humidity of 0–30% and at a temperature of 25°C, in such a way that the tempera-

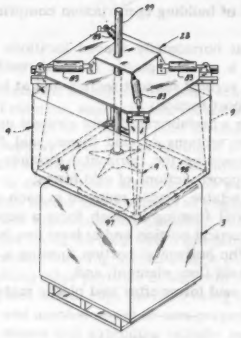
ture in the product at the termination of this treatment does not exceed 25°C and that the packaged product after sealing the package is kept at a temperature of no higher than 30°C until the product is to be used, whereat the package is opened and the product is reconditioned in an unloaded state at a relative humidity of at least 55% and a temperature of 20—45°C.

3,961,459

METHOD OF AND APPARATUS FOR WRAPPING A LOAD IN A WRAPPER OF STRETCHABLE MATERIAL

Eugene H. Wolske, Minnetonka, Mich., assignor to Bemis Company, Inc., Minneapolis, Minn.

Filed Apr. 16, 1974, Ser. No. 461,306
Int. Cl.² B65B *43/26, 63/02*
U.S. Cl. 53—24 **8 Claims**



1. The method of wrapping an item, such as a palletized load, in a wrapper of stretchable material, utilizing an open-mouth bag of said material as the wrapper, the girth of the bag when unstressed being smaller than the girth of said item, comprising: applying the bag over a plurality of stretcher members, moving said members outwardly within the bag to stretch the bag to a size larger than said item, bringing the outside of the bottom of the bag stretched on said stretcher members down into engagement with the top of said item and moving said members downwardly relative to said item to strip the bag from said members and evert the bag over said item while retracting said members inwardly as they move downwardly relative to said item to relax the stretch of the bag as it is everted thereby to reduce the force required to strip the bag from said members.

3,961,460

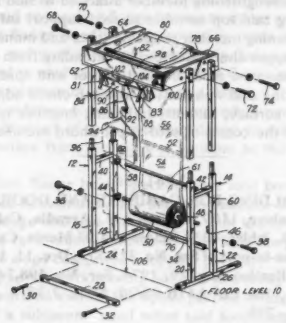
BAGGING APPARATUS WITH BAG SPREADING DEVICE AND BRAKING DEVICE

Murray Jelling, Roslyn Heights; Alexander Kahn, Massapequa; Ernest George Moore, East Meadow, and Michael Friedman, Brooklyn, all of N.Y., assignors to U.S. Dynamics Corporation, Amityville, N.Y., a part interest

Filed Dec. 9, 1974, Ser. No. 530,201
Int. Cl.² B65B *57/04, 25/20*
U.S. Cl. 53—64 **47 Claims**

1. Bagging apparatus comprising a source of flatted tubing, said tubing having spaced transverse lines of openings therein to define a sequence of detachable sections, aid detachable sections being provided with transverse seams at least in part closing the respective sections forming bags for the bagging of baggable items, said tubing being adapted for being drawn from said source over said items at a bagging zone into which the items are sequentially moved to enable the sequential bagging of said items, said seams limiting the penetration of said items into the bags at said bagging zone, said bags having detectable indicia, braking means for braking the drawing of the tubing from said source, detecting means sensitive to said indicia, operating means responsive to said detecting means for operating the braking means whereby to facilitate detaching said detachable sections, means for supporting said items in said zone for bagging; and bag spreading means around which said tubing is passed in order to facilitate passing the bags over said items, said transverse seams having openings through which the bag spreading means can pass; said detecting means being so located and said indicia being so related to said lines of openings that the braking means will be operated by said operating means to facilitate the detaching of one of said sections when said spreading means has entered the next sequential bag.

27. Bagging apparatus comprising a source of flatted tubing, said tubing having spaced transverse lines of openings therein to define a sequence of detachable sections, said detachable



sections being provided with transverse seams at least in part closing the respective sections forming bags for the bagging of baggable items, said tubing being adapted for being drawn from said source over said items at a bagging zone into which the items are sequentially moved to enable the sequential bagging of said items, said seams limiting the penetration of said items into the bags at said bagging zone, said bags having detectable indicia, braking means for braking the drawing of the tubing from said source, detecting means sensitive to said indicia for operating the braking means whereby to facilitate detaching said detachable sections; said bagging apparatus further comprising means for supporting said items in said bagging zone; said braking means including two rollers between which said tubing passes and a solenoid for urging one of said rollers against the other to grip the tubing, said solenoid being controlled by said detecting means.

3,961,461

BAG MACHINE

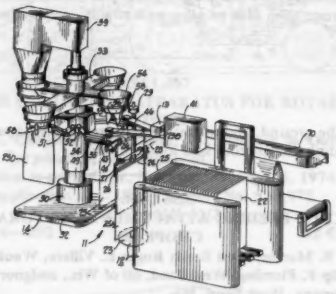
Walter Ruf, Spring Valley, and Robert George Kelley, Central Valley, both of N.Y., assignors to St. Regis Paper Company, New York, N.Y.

Filed Mar. 3, 1975, Ser. No. 554,663
Int. Cl.² B65B *1/06, 43/34*
U.S. Cl. 53—188 **15 Claims**

1. A bag machine, comprising, in combination:
a bag holder;
a bag closer; and
a multi-station bag filler supplying filled bags to said bag closer;
said multi-station bag filler including a base,
a frame journalled for rotation on said base about an axis;
arm means on said frame,
a pair of gripper hands on said arm means,
motor means connected between said base and said frame to index said frame around said axis between at least a bag pickup station and a bag filling station,

transfer means connected to transfer bags from said bag holder to said gripper hands when said hands are at said bag pickup station,

said transfer means including a transfer arm mounted for movement relative to said base and substantially normal to the plane of the bag to transfer bags from said holder to said gripper hands,



said hands being actuable between open and closed positions with said closed position gripping two portions of the bag with the bag carried in said transfer means,

means to allow said gripper hands to move in a first path toward each other from a first to a second position to open the top of the bag,

and means at said bag filling station to fill a bag held in said gripper hands.

3,961,462

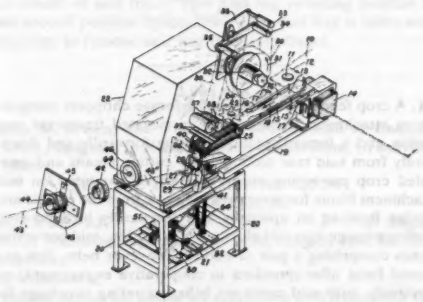
APPARATUS FOR WRAPPING CONFECTIONERY PRODUCTS AND THE LIKE

Donald A. Slathar, Chanhassen, and Christiaan H. Neutkens, Cottage Grove, both of Minn., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Feb. 4, 1975, Ser. No. 547,071

Int. Cl.² B65B *11/54*

U.S. Cl. 53—221 **22 Claims**



1. Apparatus for successively wrapping individual and similarly shaped items, comprising:

vibrating means for receiving said items and feeding said items into the apparatus;

indexing means coupled to receive said fed items and to move said items along in a spaced sequence in the apparatus;

a stationary receiving yoke;

conveying means for feeding and displacing the items into said receiving yoke, said yoke located below said conveying means; and

means operable to push said items in said yoke into a wrapping means.

3,961,463

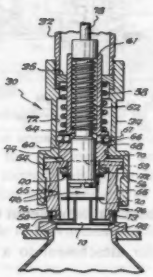
SELF-RELEASING CAPPER CHUCK

George H. Dimond, deceased, late of East Aurora, N.Y., and by Frederick C. Jensen, executor, Elma, N.Y., assignors to A-T-O Inc., Willoughby, Ohio

Filed July 14, 1975, Ser. No. 595,352

Int. Cl.² B65B *7/28*

U.S. Cl. 53—306 **8 Claims**



1. A vertically reciprocable internally gripping chuck for a machine applying closure elements to a series of containers presented therebeneath, the machine having means adapted to operate on successive containers provided along a feed path and a plurality of said vertically reciprocable chucks mounted thereon and successively positioned above and in substantial vertical alignment with the containers, supply means containing closure elements, and means for successively feeding closure elements from said supply means to said chucks, each of said chucks comprising:

a spindle means adapted for connection to said machine;

an outer body having upper and lower end portions, said outer body member being attached at said upper end portion thereof to said spindle means;

an inner body member having upper and lower end portions and being co-axially disposed within said outer body member and slidable therein;

jaw means, said jaw means being pivotedly suspended from said lower end portion of said inner body member and having flange means adapted for internally engaging closure elements;

a jaw spring means, said jaw spring means being disposed between said inner and outer body members for urging said inner body member in a downward direction with respect to said outer body member so that said jaw means are urged to pivot radially outward to internally engage closure elements; and

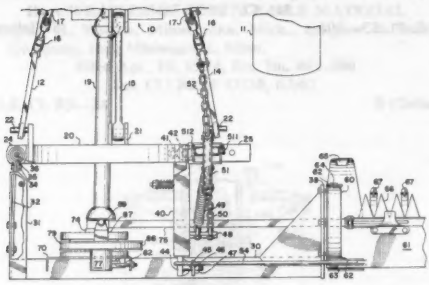
interlock means operatively disposed between said inner and outer body members, said interlock means retarding the downward movement of said inner body member as induced by said jaw spring means after disposition of a closure element onto a container so that said jaw means may release from the closure element by pivoting radially inward.

3,961,464

CUTTERBAR CONTROL SYSTEM

Robert Sorensen, Glen Ellyn, and Richard A. Zablocki, Downers Grove, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Apr. 10, 1975, Ser. No. 566,877
Int. Cl.² A01D 35/16
U.S. Cl. 56—10.4 17 Claims



1. A mower adapted for attachment at the rear of a tractor comprising:

a frame adapted for attachment to a vertically movable tractor hitch;

a drag bar pivotally mounted through means at one end to said frame for rotation about a vertical axis;

a cutterbar pivotally attached at the other end of said drag bar for rotation thereabout between an operative position and a gagged position;

a generally fore-and-aft extending pull bar having a forward end attached to said frame by first means permitting rotation of said pull bar about an axis generally longitudinal of said pull bar and having a rearward end attached to an intermediate portion of said drag bar by second means permitting rotation of said pull bar about said generally longitudinal axis;

a float spring interconnecting said pull bar and said frame and disposed to exert a torque on said pull bar about said generally longitudinal axis in a first direction upon in said operative position;

a lifting member connected to said pull bar and disposed to rotate said pull bar about said generally longitudinal axis in said first direction to said gagged position upon being loaded; and

gag link means for pivoting said cutterbar about said drag bar having a first end connected to said cutterbar and a second end pivotally attached to said pull bar at a point removed from said axis of rotation thereof and disposed to rotate said pull bar in a direction opposite said first direction due to the weight of said cutterbar.

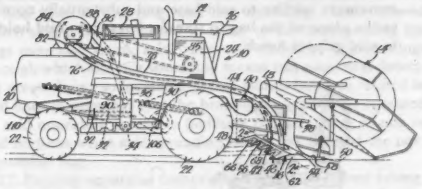
3,961,465

VACUUM HARVESTING MACHINE

LeRoy Winings, 208 E. Third St., Harristown, Ill. 62537

Filed Dec. 4, 1974, Ser. No. 529,353
Int. Cl.² A01D 45/22
U.S. Cl. 56—13.1 9 Claims

1. In a combine for harvesting a kernal-type product, a power unit having a chassis with product processing apparatus therein, a cutter platform mounted on the front of said power unit, means for conveying product from said cutter platform into said processing apparatus, in combination, a floating row cover mounted on said cutter platform between said platform and said power unit, means mounted on said chassis for creating a suction under said row cover to draw up loose product



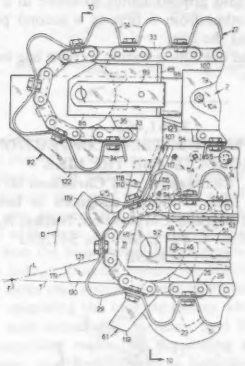
from the ground, and means in said processing apparatus for separating debris from said loose product.

3,961,466

CROP FEEDING ATTACHMENT FOR FORAGE CHOPPERS

Virgil B. Martin, West Bend; Roger L. Villers, Waubeka, and Philip F. Fleming, West Bend, all of Wis., assignors to Gehl Company, West Bend, Wis.

Continuation of Ser. No. 437,958, Jan. 30, 1974, abandoned.
This application June 4, 1975, Ser. No. 583,685
Int. Cl.² A01D 45/02
U.S. Cl. 56—14.3 1 Claim



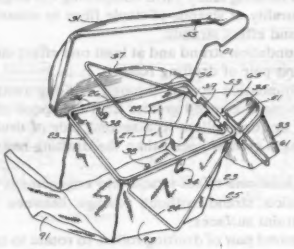
1. A crop feeding attachment for forage choppers comprising an attachment frame having an elevated transverse rear section and a forward section slanting forwardly and downwardly from said rear section; crop cutting means and associated crop conveying means operatively mounted on said attachment frame for severing a crop row from the ground and moving it along an upwardly and rearwardly inclined crop feeding passage into said elevated rear section; said conveying means comprising a pair of endless conveyor belts, first and second front idler sprockets in cooperative engagement, respectively, with said conveyor belts, mounting structures for said front idler sprockets reciprocably mounted on said forward frame section for back and forth movement lengthwise of said crop feeding passage, and resilient means biasing said mounting structures toward forwardly adjusted, conveyor belt tensioning positions, respectively; and said crop cutting means comprising a cutting blade rigidly secured to the mounting structure for said first idler sprocket so as to present a knife edge of said cutting blade in a crop cutting position at the inlet end of said crop feeding passage; a crop engaging star wheel connected with said first idler sprocket for rotation therewith on a level below and in face to face engagement with said cutting blade, and a plate member mounted on the mounting

structure for said second sprocket wheel and presenting a crop engaging side edge on a level above said cutting blade and a rear edge spaced rearwardly from said cutting blade so as to provide a crop material discharge gap between said rear edge of said plate member and the upper surface of said cutting blade and between the lower surface of said plate member and the side edge of said cutting blade; said star wheel and plate member being operatively interrelated so as to guide standing crop material toward said knife edge while cut crop material is conveyed rearwardly and upwardly by said crop conveying means.

3,961,467
GRASS COLLECTING APPARATUS FOR ROTARY MOWER

Eugene C. Carpenter, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 503,348, Sept. 5, 1974. This application Dec. 18, 1974, Ser. No. 533,975
Int. Cl.² A01D *35/22*
U.S. Cl. 56—202 **12 Claims**



5. A lawn mower comprising a grass collecting apparatus including a grass collecting bag, a support, a frame removably engageable with said bag for retention thereof in a grass collecting position, and means mounting said frame from said support for movement between a bag retaining position and a second position spaced from said bag retaining position so that movement of said frame from said bag retaining position to said second position is operable, when said bag is laden with clippings, to remove said bag from said frame.

3,961,468
HEDGER

Philip A. Brown, and Vincent B. Brown, both of Conklin, Mich., assignors to Harlo Products Corporation, Grandville, Mich.

Filed Dec. 21, 1973, Ser. No. 427,091
Int. Cl.² A01D *55/00*
U.S. Cl. 56—237 **27 Claims**

1. A trimming apparatus for trees, hedges, and the like comprising:

a framework;

ground-supported means for supporting said framework for movement over the ground;

an upstanding tower mounted on said framework;

a variably positionable trimming means on said tower;

support means on said tower for mounting said trimming means for generally vertical movement along said tower;

said trimming means including

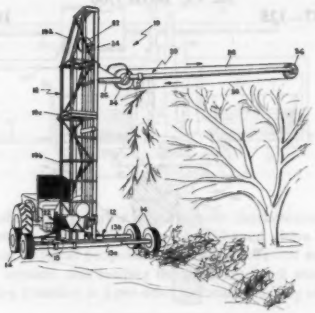
a support arm,

flexible, resilient, drive means and flexible, resilient, idler means spaced apart on said support arm for supporting a continuous, band-type saw blade,

a continuous, band-type saw blade mounted on said drive and idler means, said blade being substantially unsupported intermediate said drive and idler means, and

means on said support arm for rotating said blade in a closed path about said drive and idler means;

said trimming apparatus also including pivot means between said support means and support arm for pivoting said arm toward and away from said tower about a first axis which is longitudinally disposed in the intended direction of

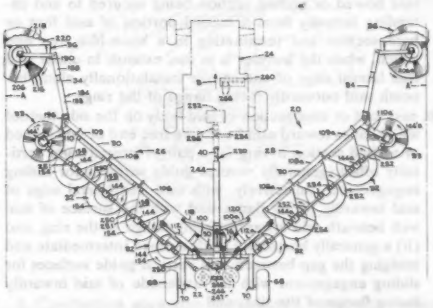


movement of the apparatus, and rotation means on said support means for rotating said support arm about a predetermined second axis generally transverse to the intended direction of movement of the apparatus; said pivot means and rotation means allowing the cutting edge of said saw blade to be variously inclined for cutting and trimming.

3,961,469
ROTARY WINDROWING MACHINE

Leon R. McRobert, Ocoee, Fla., assignor to FMC Corporation, San Jose,, Calif.

Filed Aug. 26, 1974, Ser. No. 500,238
Int. Cl.² A01D *51/00*
U.S. Cl. 56—328 R **20 Claims**



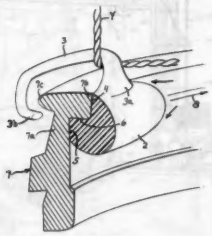
1. In a windrowing machine for windrowing articles from an article supporting surface which may vary in contour, the combination of a rotatable windrowing means of at least semi-rigid construction defined by a generally continuous outer peripheral surface which extends in a generally vertical plane and which is adapted to move articles, means for supporting one side of side windrowing means at a predetermined distance above the article supporting surface, means for advancing the rotatable windrowing means along a predetermined path, said means for advancing being coupled to said means for supporting the windrowing means, drive means including a generally vertically extending drive shaft for rotating said rotatable windrowing means in a predetermined direction, and universal joint means connecting said drive shaft to said rotatable windrowing means for universal movement allowing the rotatable windrowing means to follow the contour of the article supporting surface while moving along said path.

3,961,470

C-SHAPED RING TRAVELERS FOR YARN TWISTERS

Robert L. Goerens, Esch sur Alzette, Luxemburg, assignor to Uniroyal Inc., New York, N.Y.

Filed Dec. 3, 1974, Ser. No. 529,184
Claims priority, application Germany, Dec. 5, 1973, 2360615
Int. Cl.² D01H 7/60
U.S. Cl. 57—125 18 Claims



1. A C-shaped ring traveler designed for movement in only one given direction along a ring of a yarn twister or like machine, wherein the ring is of generally T-shaped cross-section and has a generally upright annular web and at the top of the latter a pair of generally transverse circumferential flanges the free lateral edges of which face inwardly and outwardly of the ring, respectively;

a. said traveler having a body including (i) a relatively thicker elongated foot or base section which, when the traveler is in use, is juxtaposed to and moves longitudinally along the inside of the ring, and (ii) a relatively thinner transverse bowed or arched section which, when the traveler is in use, extends generally horizontally across and moves translationally along the top of the ring, said bowed or arched section being secured to and extending laterally from a medial portion of said foot or base section and terminating in a hook-like free end which, when the traveler is in use, extends in under said free lateral edge of and moves translationally along beneath said outwardly facing flange of the ring;

b. said foot or base section of said body on the side thereof which faces toward said hook-like free end of said bowed or arched section having (i) a pair of laterally and vertically offset, generally vertical guide surfaces for sliding engagement, respectively, with said free lateral edge of said inwardly facing flange and with the surface of said web beneath said inwardly facing flange of the ring, and (ii) a generally horizontal guide surface intermediate and bridging the gap between said vertical guide surfaces for sliding engagement with the underside of said inwardly facing flange of the ring; and

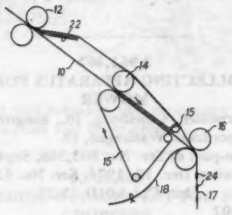
c. said foot or base section of said body having throughout its expanse, except at the locations of said vertical and horizontal guide surfaces, a cross-sectional configuration (i) which is generally drop-shaped or airfoil-like with reference to each of two mutually perpendicular planes including the longitudinal axis of said foot or base section, (ii) which has, as viewed with reference to said given direction of movement of the traveler, a relatively blunt leading edge and a relatively less blunt trailing edge, and (iii) which, when the traveler is in use, is effective to generate aerodynamic lift forces directed inwardly of the ring so as to oppose the effects of centrifugal forces on said foot or base section of said body and thereby to minimize rubbing friction between said vertical guide surfaces and, respectively, said free lateral edge of said inwardly facing flange and said surface of said web beneath said inwardly facing flange.

3,961,471

PRODUCTION OF YARN

Lindsay Alfred Allen, Ilkley, England, assignor to IWS Nominee Co. Ltd. and Commonwealth Scientific and Industrial Research Organization, both of Canberra, Australia

Filed Sept. 4, 1974, Ser. No. 503,479
Int. Cl.² D02G 3/34
U.S. Cl. 57—140 J 8 Claims



1. A method of forming fancy yarns comprising the steps of:

providing a plurality of strands of staple fibre to constitute foundation and effect strands;

passing said foundation strand and at least one effect strand through a first pair of drafting rollers;

passing said foundation strand through drafting restraint surfaces moving at a speed greater than the speed of the first pair of drafting rollers to a second pair of drafting rollers having a greater speed than the drafting restraint surfaces;

passing the at least one effect strand into engagement with said foundation strand without passage between said drafting restraint surfaces;

causing said second pair of drafting rollers to rotate to cause drafting of said strands and to pull in varying portions of said effect strand while constraining said foundation strand by the action of said drafting restraint;

incorporating said portions of said effect strand with said foundation strand as irregularities;

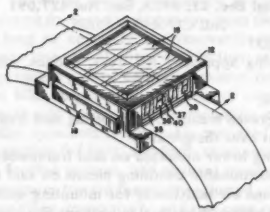
and spinning said drafted strands together to form yarn in which said irregularities persist as slubs in the yarn.

3,961,472

SOLID STATE ELECTRONIC TIMEPIECE

Roger W. Riehl, Troy, Ohio, assignor to Ragen Semiconductor, Inc., Whippany, N.J.

Division of Ser. No. 139,468, May 3, 1971, Pat. No. 3,823,551.
This application July 10, 1974, Ser. No. 486,990
Int. Cl.² G04B 19/24, 37/08
U.S. Cl. 58—4 A 17 Claims



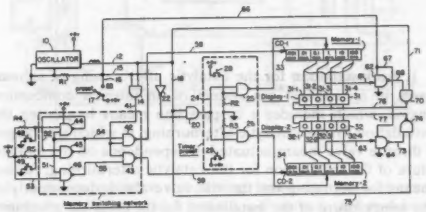
1. An electronic solid-state timepiece adapted for use as a wrist watch comprising means for generating electrical pulses at a constant predetermined frequency, battery means for supplying power to said generating means, means for counting said pulses and for producing a plurality of electrical time outputs corresponding to at least hours and minutes, electro-

optical digital readout means for producing a visual display of selected said outputs from said counting means, a solar cell connected to recharge said battery means, means including a control element for selectively connecting said time outputs of said counting means to said digital readout means, a substantially water and air impervious encasing material surrounding and supporting said battery means, said pulse generating means, said counting means, said readout means, said solar cell and said control element to form a durable fluid-tight time capsule, said encasing material being capable of transmitting light in areas adjacent said solar cell and said readout means, and means disposed outboard of said time capsule for remotely activating said control element within said time capsule by producing a field acting through said encasing material.

3,961,473
ELECTRONIC CHESS TIMER

George Hung, 339 Harwick Road, Rochester, N.Y. 14609

Filed Mar. 6, 1975, Ser. No. 556,167
Int. Cl.² G04B 5/20
U.S. Cl. 58—145 D **10 Claims**



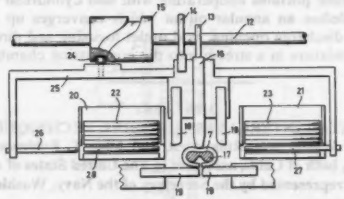
1. A digital timer for indicating the time for completing moves in a chess match, comprising
a source of electrical signals,
a pair of registers for storing said signals in bit form,
presetting means operable for selectively directing signals from said source to said registers for storage therein,
means coupled to said source of electrical signals, for controlling the shifting of the stored signals serially out of said registers to reduce the quantities of signals previously stored therein,
means for selectively connecting said shifting means to said registers one at a time to reduce the signals stored therein, and
a pair of electrical displays connected to said registers and operative separately to indicate in digital form for each register the operating time in minutes it will take said shifting means to remove all remaining stored signals from the associated register.

3,961,474
METHOD AND APPARATUS FOR THE MANUFACTURE OF CHAINS WITH ROUND LINKS, HAVING VARYING MECHANICAL CHARACTERISTICS

Paul Esser, Cologne, Germany, assignor to Meyer, Roth & Pastor Maschinenfabrik GmbH, Cologne, Germany

Filed Aug. 28, 1974, Ser. No. 501,369
Claims priority, application Germany, Aug. 28, 1973, 2343266; Aug. 28, 1973, 2348851
Int. Cl.² B21L 1/02
U.S. Cl. 59—23 **5 Claims**

1. A method for the manufacture of link chains having links consisting of C-shaped bent stock sections formed on a chain bending machine comprising, in combination, the steps of feeding a wire stock section in a longitudinal direction in front of a bending mandrel which is arranged vertically relative to the longitudinal feeding direction of the stock material; locking the stock material in a locking fixture which is advanced intermediately of the stock material and the bending mandrel, and positioning the locking fixture vertically relative to both the center position of the stock material and the front of the bending mandrel; bending the stock material by means of bending tools round the bending mandrel and forming the

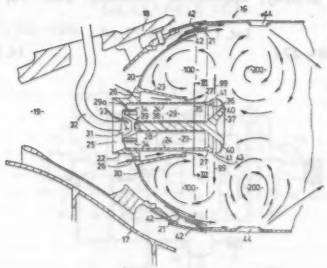


C-shape of a chain link, the improvement characterized in that the wire stock sections forming the C-shaped chain links are of different physical properties, and have different extensibility under tension, and feeding the different stock materials to the bending mandrel in a pre-selected and recurring sequence.

3,961,475
COMBUSTION APPARATUS FOR GAS TURBINE ENGINES

Robert David Wood, Derby, England, assignor to Rolls-Royce (1971) Limited, London, England

Continuation of Ser. No. 394,395, Sept. 4, 1973, Pat. No. 3,906,718. This application Mar. 31, 1975, Ser. No. 563,468
Claims priority, application United Kingdom, Sept. 7, 1972, 41504/72
The portion of the term of this patent subsequent to Sept. 23, 1992, has been disclaimed.
Int. Cl.² F02C 7/22
U.S. Cl. 60—39.65 **3 Claims**



1. Combustion apparatus comprising a combustion chamber, an upstream end wall of said chamber, a downstream wall of said chamber, openings in said chamber walls defining first and second air inlet means for delivering air into said chamber, a member extending axially downstream of said upstream end wall and defining at least in part a passage which is in communication with said first air inlet means, means for supplying fuel to the passage, a deflecting member disposed at the downstream end of the passage for deflecting the air/fuel mixture in a direction substantially radially of said passage whereby to promote a substantially toroidal vortex circulating first radially outwards from said passage, then upstream towards the upstream end wall of the combustion chamber and then downstream adjacent and substantially parallel to the passage, said secondary air inlet means being positioned to promote a secondary toroidal vortex immediately downstream of said first vortex and having a hand opposite to that of the first vortex, said member defining said passage being a cylin-

drical member, wherein the deflecting member has a surface for focusing and directing the air/fuel mixture which surface is concentric with said cylindrical member, said surface having a portion of increasing radial dimension extending in the downstream direction followed by a portion of further increased radial dimension extending in the upstream direction, said surface portions cooperating with said cylindrical member to define an annular outlet which converges up to an annular discharge opening, said outlet focusing and directing air/fuel mixture in a stream into the combustion chamber.

3,961,476
METAL INTERLAYER ADHESIVE TECHNIQUE

Bernard Wasserman, Ridgecrest, and Allen T. Robinson, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

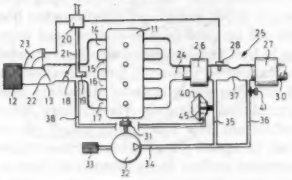
Filed Sept. 11, 1975, Ser. No. 612,429
Int. Cl.² F20K 9/04
U.S. Cl. 60—255 **4 Claims**

1. A rocket motor containing a layer of silicone rubber adjacent to the inner wall of the combustion chamber and bonded thereto, a layer of lowly exothermic metal adjacent to the inner wall of the silicone rubber layer and bonded thereto and a solid rocket propellant grain inside of and adjacent to the inner wall of the metal layer and bonded thereto, the solid propellant grain containing a binder of isocyanate cured hydroxy terminated polybutadiene.

3,961,477
PROCESS AND SYSTEM FOR DETOXICATING THE EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE

Hermann Grieshaber, Stuttgart, and Wolf Wessel, Schwieberdingen, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Jan. 3, 1975, Ser. No. 538,243
Claims priority, application Germany, Jan. 12, 1974, 2401417
Int. Cl.² F02B 75/10
U.S. Cl. 60—274 **16 Claims**



1. A process for detoxicating the exhaust gases of an internal combustion engine having an exhaust line containing in series a first reactor for reducing nitrogen oxides and a second reactor for oxidizing hydrocarbons and carbon monoxide, and an oxygen measuring element connected to the exhaust line comprising the steps of:

a. regulating the mass ratio of air to fuel on the suction side of the engine as a function of the measured quantity of the oxygen measuring element;

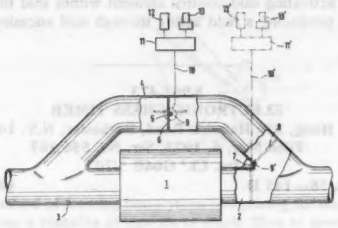
b. injecting additional air into the exhaust line upstream of the oxidizing reactor in the form of a first and second air stream, the first one of which is injected in the exhaust flow direction upstream of the oxygen measuring element, and

c. regulating the first air stream at a quantity corresponding to the gas throughput of the engine, so that when the measuring element measures a stoichiometric mixture a slightly rich air-fuel mixture is supplied to the engine.

3,961,478
INSTALLATION FOR THE CATALYTIC AFTERBURNING OF EXHAUST GASES IN THE EXHAUST GAS SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Karlheinz Lange, Stuttgart, Germany, assignor to Dr. -Ing. H.c.F. Porsche Aktiengesellschaft, Germany

Filed Dec. 6, 1974, Ser. No. 530,298
Claims priority, application Germany, Dec. 5, 1973, 2360581
Int. Cl.² F02B 75/10
U.S. Cl. 60—277 **6 Claims**

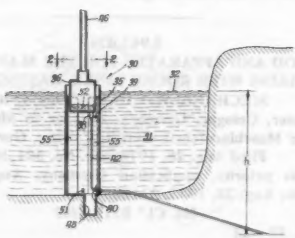


1. An installation for the catalytic afterburning of exhaust gases in an exhaust gas system of an internal combustion engine, which includes a by-pass line means by-passing the installation for the catalytic afterburning, in which is arranged a throttle valve means actuated in dependence on the temperature of the installation for the catalytic afterburning, further means for actuating the throttle valve also independently of the temperature of the installation for the catalytic afterburning, in dependence of at least one parameter of the internal combustion engine, characterized in that the throttle valve means is actuated, after turning off the ignition of the internal combustion engine, by the oil pressure in the internal combustion engine which continues to exist for a short period of time, by way of an oil pressure switch means and a control means forming part of said further means.

3,961,479
ENERGY CONVERTING HYDRAULIC BUOYANT MOTOR

Ray C. Anderson, 6655 S. New Haven, Tulsa, Okla. 74136

Continuation-in-part of Ser. No. 407,523, Oct. 18, 1973. This application Jan. 31, 1974, Ser. No. 425,945
Int. Cl.² F03C 5/02
U.S. Cl. 60—496 **37 Claims**



1. A hydraulic buoyant motor adapted to operate in a water medium having a surface level and a drain outlet at some level below the surface level so that a static fluid pressure head exists across the motor and comprising:

a buoyant reciprocating piston disposed in the water medium;

valve means for controlling the relative level of the water tending to buoy up the piston with respect to the water surface level;

power output means operatively associated with said piston and adapted to perform work by the buoyant force and motion of said piston; and

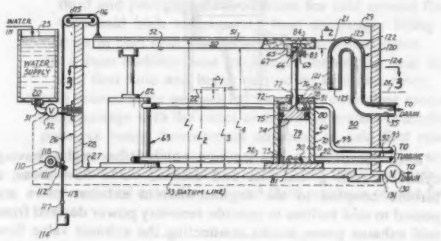
detention means connected to said piston and adapted to restrain the upward movement of said piston prior to commencement of its upward stroke.

3,961,480

PRESSURE SOURCE AND SYSTEMS INCORPORATING IT

William S. West, 380 Cliff Drive Apt. 2, Pasadena, Calif. 91107

Filed Jan. 17, 1974, Ser. No. 432,667
Int. Cl.² F03B *13/12*; F03G *3/00*
U.S. Cl. 60—496 **29 Claims**



1. A pressure source comprising: pressurizing means comprising an enclosure which bounds a chamber, said enclosure comprising a first and second portion, at least one of which is movable relative to the other as a consequence of a force applied to one of them so as to reduce the volume of the chamber and thereby to place under pressure liquid which is contained therein; a conduit leading from said chamber through which a stream of said liquid under pressure can flow for use in doing work; a flotation tank adapted to contain liquid at an upper and at a lower elevation; weight means floatable buoyantly in the liquid in the flotation tank; force transmission means so disposed and arranged as to apply force from elevated weight means to said one portion cycling means for controlling the supply of liquid into, and the drainage of liquid out of, the flotation tank so as respectively to raise the weight means and to permit it to descend; and release means to delay the descent of the weight means whereby the weight means can descend at a rate which is independent of the level of the liquid in the flotation tank.

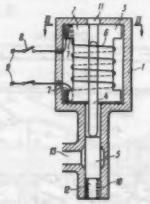
3,961,481

ARRANGEMENT FOR RETAINING AN ACTUATING MEMBER IN AN EXTREME POSITION

Nikolai Trofimovich Romanenko, Tokmakov pereulok, 13-15, kv. 165; Jury Filippovich Nikitin, ulitsa Arbat, 18, kv. 31, and Ljudmila Anatolievna Litenkova, Bashilovskaya ulitsa 19, kv. 158, all of Moscow, U.S.S.R.

Continuation of Ser. No. 499,075, Aug. 20, 1974, abandoned, which is a continuation of Ser. No. 378,904, July 13, 1973, abandoned. This application Mar. 24, 1975, Ser. No. 561,076
Claims priority, application U.S.S.R., July 13, 1972, 1808784
Int. Cl.² F03C *5/00*
U.S. Cl. 60—531 **1 Claim**

1. An arrangement for retaining an actuating member in an extreme position thereof and for releasing the actuating member to perform a working stroke, comprising: a housing; a plurality of undeformable supports mounted within said housing in spaced relationship; an undeformable connecting element permanently cooperating with said actuating member, said connecting element being received between said supports; at least one coil of wire stressively wound about said supports to product elastic deformation of tension of the wire for urging said supports to engageably retain said connecting element with an effort sufficient to hold said actuating member in an extreme position thereof, said coil of wire being selectively connectable to a power supply source whereby



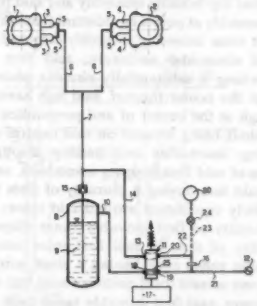
when said wire is connected to the power supply the temperature of the wire increases resulting in reduced elastic deformation in the wire and said effort is reduced in magnitude so that said connecting element is released to be displaced relative to said supports and said actuating member is permitted to move through its working stroke.

3,961,482

METHOD AND DEVICE FOR CLEANING A SUPERCHARGING SET POWERING TURBINE DRIVEN BY THE EXHAUST GASES OF A HEAT ENGINE

Joseph Auguste Jamaux, Saint-Germain-en-Laye, France, assignor to Societe d'Etudes de Machines Thermiques, Saint Denis, France

Filed May 16, 1974, Ser. No. 470,438
Claims priority, application France, June 19, 1973, 73.22303
Int. Cl.² F02B *33/44*
U.S. Cl. 60—606 **7 Claims**

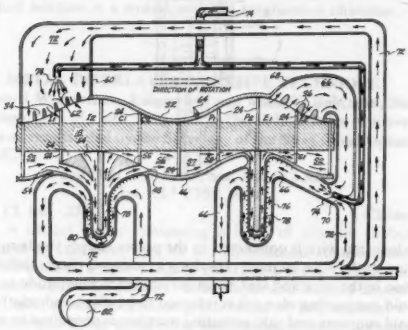


1. A method of cleaning an exhaust gas-driven power turbine for operating a supercharging set of a heat engine such as an internal combustion engine, comprising the steps of putting a washing liquid under pressure by means of a compressed gaseous fluid such as compressed air, feeding said washing liquid during washing periods into said turbine through injection nozzles fitted onto inlet ducts for the exhaust gases on said turbine and constantly blowing outside of the washing periods a determined flow rate of compressed gaseous fluid into said injection nozzles for steadily sweeping or scavanging them with a gaseous current thereby avoiding their being clogged or fouled and their being choked.

3,961,483
COMPOSITE CYCLE ENGINE

Edward Robin Wiley, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed July 3, 1975, Ser. No. 593,097
Int. Cl.² F01K 23/10
U.S. Cl. 60—616 12 Claims



1. A rotary composite cycle engine comprising:

a. a first top housing assembly and a first bottom housing assembly, said first housing assemblies each being substantially annular about a central axis passing through a central hub cover in said first housing assemblies having bearing means for supporting a shaft passing through said bearing means along said central axis, said first housing assemblies each having an inner surface contoured as a sinusoid of two periods adjacent to said central hub cover and converging toward focal points at the outer periphery of said annulus, said first housing assemblies being disassemblably joined one to the other along the periphery of said first housing assemblies to form a first sealed sinusoidal enclosure of substantially constant spacing between said first top housing assembly and said first bottom housing assembly at points equidistant from said central axis;

b. a first rotor assembly rotatably disposed within said first sealed sinusoidal enclosure, said first rotor assembly comprising a substantially circular plate having a fixed hub at the center thereof, said hub having a shaft therethrough at the center of and perpendicular to said plate, said shaft being located on said central axes of said first housing assemblies and passing through said bearing means of said first housing assemblies, said circular plate and said hub having a plurality of slots therein disposed angularly equidistant around said rotor;

c. a plurality of first movable vanes disposed within said plurality of slots in said first rotor assembly, said first movable vanes each having a pivot point disposed adjacent one of said focal points of said first sealed sinusoidal enclosure, said first movable vanes each having one edge disposed close adjacent said sinusoidal surface of said first top housing assembly and a second edge disposed close adjacent said sinusoidal surface of said first bottom housing assembly, said first movable vanes defining a plurality of first spaces between said first rotor assembly and said first top housing assembly and an equal number of second spaces between said first rotor assembly and said first bottom housing assembly, said first spaces and said second spaces expanding and contracting sinusoidally as said first rotor assembly rotates;

d. means for inserting a first expandable fluid into said first spaces;

e. means for inserting a second expandable fluid into said second spaces;

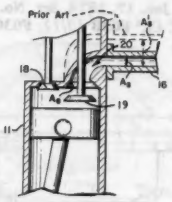
f. means for causing said first expandable fluid to expand in one of said first spaces; and,

g. means for causing said second expandable fluid to expand in one of said second spaces.

3,961,484
INTERNAL COMBUSTION ENGINE WITH POWER RECOVERY TURBINE

James L. Harp, Jr., 8435 Cozycroft, Canoga Park, Calif. 91306

Filed July 29, 1974, Ser. No. 492,606
Int. Cl.² F02G 3/02
U.S. Cl. 60—624 1 Claim

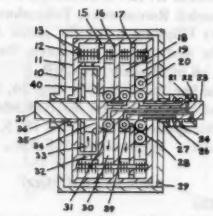


1. In combination: an internal combustion engine having cylinders with given inlet and exhaust valve flow areas; a turbine coupled to the engine wherein exhaust gases are passed to said turbine to provide recovery power derived from said exhaust gases; stacks connecting the exhaust valve flow areas to said turbine; each stack having a cross sectional flow area less than the given cross sectional flow area of the exhaust valve to which it is connected; and a port for each cylinder connecting the associated exhaust stack to the exhaust outlet, said port reducing in cross sectional area between said outlet and said stack, the cross sectional flow area of each of said stacks being from 0.50 to 0.90 the given cross sectional flow area of the exhaust valve to which it is connected, said reduced stack areas permitting a quicker buildup of high pulse pressure in the stack thereby reducing throttling losses during the valve opening process.

3,961,485
TURBINE WITH HEAT INTENSIFIER

Michael Eskeli, 7994-41 Locke Lane, Houston, Tex. 77042

Continuation-in-part of Ser. No. 413,258, Nov. 6, 1973, Pat. No. 3,889,471, and a continuation-in-part of Ser. No. 474,729, May 30, 1974. This application June 16, 1975, Ser. No. 587,408
Int. Cl.² F01K 23/08
U.S. Cl. 60—655 4 Claims



1. A turbine for generating power comprising:

a. a first shaft and a second shaft rotatably supported in bearings;

b. a first rotor supported for rotation by said first shaft;

c. a second rotor supported for rotation by said second shaft;

d. said first rotor comprising:

i. an inward extending first fluid passage and an inward extending first fluid passage, a fist passage means connecting the outward ends of aid outward extending first fluid passage and said inward extending first fluid passage and a second passage means for connecting the inner ends of said outward extending first fluid passage and said inward extending first fluid passage, a first fluid circulating in said passages, being compressed by centrifugal force by said first rotor with accompanying temperature increase;

ii. an outward extending second fluid passage connected at its outward end with an opening for a second fluid with said second fluid being passed into nozzles oriented to discharge said second fluid forwardly in the direction of rotation;

iii. a high temperature heat exchanger being carried by said first rotor and providing heat removal for said first fluid and providing heat addition for said second fluid with said high temperature heat exchanger being at least in part near the periphery of said first rotor;

iiii. a heat addition heat exchanger for adding heat into said first fluid and being carried by said first rotor;

e. said second rotor comprising an inward extending second fluid passage with the outer ends of said inward extending passages being downstream adjacent to said first rotor nozzles and the inner ends of said inward extending second fluid passages communicating with the inner ends of said outward extending second fluid passages of said first rotor.

3,961,486

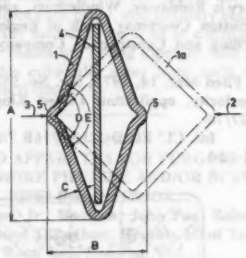
PIPE FOR STICKING DOWN DRAINS INTO THE GROUND

Sven Granholm, and Signar Lundmark, both of Skelleftea, Sweden, assignors to Linden-Alimak AB, Skelleftea, Sweden

Filed Oct. 22, 1974, Ser. No. 516,923

Int. Cl.² E02B *11/00*

U.S. Cl. 61—11 **4 Claims**



1. An elongated pipe adapted to be driven into the ground in the direction of its elongation for use in sticking drains down into the ground, said pipe having a predetermined, fixed cross-sectional profile of substantially parallelogram shape, two opposite corners of said parallelogram being substantially closer to one another than the other two opposite corners thereof, all sides of said parallelogram being integral with one another and the dimensions of said parallelogram being substantially constant throughout the length of said pipe, the parallelogram shape of said pipe causing said pipe to exhibit resistance to bending sufficient to permit said pipe to be driven into the ground and causing comparatively small disturbance of the ground as said pipe is driven into the ground, said pipe being used to protect a drain located therein, the spacing between the more widely spaced corners of said parallelogram being at least as great as the width of such a drain.

3,961,487

MINE ROOF SUPPORT

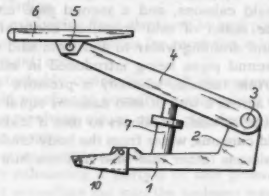
Gunter Blumenthal, Westerholt, Germany, assignor to Bochumer Eisenhutte Heintzmonn, & Co., Bochum, Germany

Filed Sept. 30, 1975, Ser. No. 618,212

Claims priority, application Germany, Nov. 9, 1974, 2453257

Int. Cl.² E21D *15/44*

U.S. Cl. 61—45 D **10 Claims**



1. A mine roof support, comprising at least two elongated support members laterally adjacent one another and extending transverse to the mine face, each of said support members having an underside, a first end portion facing towards and a second end portion facing away from said mine face; shield means mounted on said second end portions and extending upwardly thereof for supporting the mine roof; extension means connectable to said first end portions of said support members with limited freedom of pivoting movement in vertical direction, and including a ground plate extending to all of said support members and inclined relative to said undersides thereof, and terminal portions which rise upwardly towards said mine face in the region of the free ends of said first end portions of said support members.

3,961,488

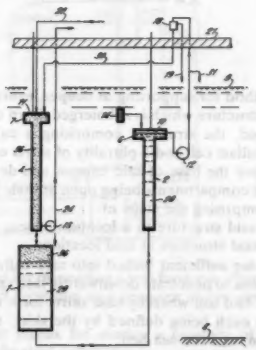
METHOD FOR FILLING AND EMPTYING OF CASSIONS

Torbjorn Ovsttun, Oslo, Norway, assignor to A/S Akers Mek. Verksted, Norway

Filed Nov. 19, 1974, Ser. No. 525,252

Int. Cl.² E02B *1/00*; E02D *23/00*

U.S. Cl. 61—46 **9 Claims**



5. An arrangement for the filling and emptying by gravitational means of caissons in which are stored hydrocarbons such as oil, said caissons being filled to capacity with liquid of at least one of water and hydrocarbon, said caissons being located below a body of water and being anchored to the bottom thereunder, at least one column extending above the body of water and to which said caissons are connected, a platform carried above said body of water, at least two con-

tainers being disposed in an atmospheric compartment arranged inside said one or more columns, said containers being disposed below said body of water and above said caissons, at least one of said containers containing said hydrocarbon and having an inlet disposed below said body of water and an outlet thereon, and at least one of said containers containing water and having an inlet situated below said body of water and an outlet thereon, a first pipe communicating between the outlet of said container containing hydrocarbon and said caissons for supplying and draining stored hydrocarbons to and from said caissons, and a second pipe communicating between the outlet of said container containing water for supplying and draining water to and from said caissons, said first and second pipes being introduced in said caissons at different levels therein, whereby a pressure differential is established across a wall of said caissons equal to the hydrostatic pressure at said containers so that if leakage paths develop in said caissons, water from the body tends to be forced into said caissons rather than said hydrocarbon being forced out.

3,961,489

METHOD FOR PLACING A FLOATING STRUCTURE ON THE SEA BED

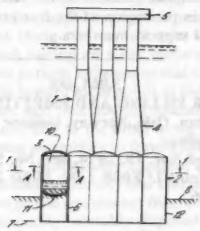
Olav Mo, Gronsundveien 94, Nesbru, 1370 Asker, Norway

Division of Ser. No. 352,679, April 19, 1973, Pat. No. 3,911,687. This application Oct. 18, 1974, Ser. No. 516,123

Claims priority, application Norway, May 2, 1972, 1541/70

Int. Cl.² E02B *17/00*

U.S. Cl. 61—46.5 **2 Claims**



1. A method for supporting at deeper layers of sea bed soil a floating structure which is submerged down onto the sea bed and founded, the structure comprising a caisson having at least one ballast cell and a plurality of skirts extending downwardly below the base of said caisson and defining compartments, said compartments being open at their lower ends, said method comprising the steps of:

floating said structure to a location at sea;

sinking said structure at said location;

introducing sufficient ballast into said ballast cell to cause the skirts to penetrate downwardly into said deeper layers of sea bed soil whereby said skirts form closed compartments each being defined by the skirt, the base of said caisson, and the sea bed;

removing sea water trapped within said closed compartments; and

removing ballast from said ballast cell to reduce the vertical load on the sea bed to a load level which the material making up the sea bed can bear without failing whereby movement of said structure is primarily restrained by adherence and friction between the sea bed and said skirts and by temporary pressure differentials within said closed compartments created by partial movement of said structure.

3,961,490

ANCHORAGE OF FLOATING STRUCTURES

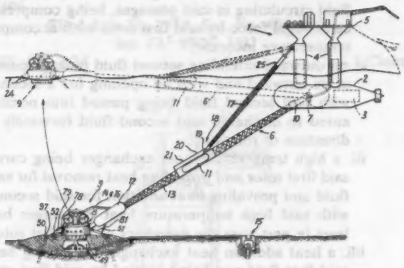
Jean-Louis Corgnet, Boulogne Billancourt, France, assignor to Compagnie Francaise des Petroles, Paris, France

Filed Dec. 23, 1974, Ser. No. 535,920

Claims priority, application Canada, Dec. 21, 1973, 188913; France, Apr. 30, 1974, 74.14934; Nov. 27, 1974, 74.38886

Int. Cl.² E02D *21/00;* **B63B** *21/00;* **B65B** *3/04*

U.S. Cl. 61—46.5 **53 Claims**



1. An assembly for anchorage of a floating structure comprising: a floating structure; a first enclosure having an opening at its top portion and arranged in the seabed; a movable member; means to releasably and rotatably connect said movable member to said first enclosure so as to form with said first enclosure a watertight chamber capable of being brought to atmospheric pressure, said means allowing said movable member to rotate through 360° about a vertical axis relative to said first enclosure; and rigid arm means extending from said movable member to said floating structure and pivotable about two horizontal axes by which its ends are attached respectively to said movable member and to said floating structure.

3,961,491

PILE CONNECTING DEVICE

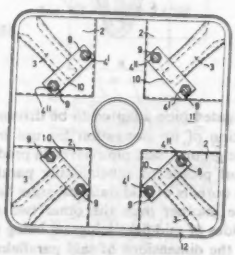
Anthony Lewis Reddaway, Windlesham, and Frank Edward Young, Sutton Courtenay, both of England, assignors to West's Piling and Construction Company Limited, Great Britain

Filed Mar. 14, 1975, Ser. No. 558,386

Claims priority, application United Kingdom, Mar. 14, 1974, 11427/74

Int. Cl.² E02D *5/30;* **F16B** *7/00*

U.S. Cl. 61—56 **7 Claims**



1. A pile connecting device, comprising a plurality of plate members each adapted to be secured to the end of a first pile section and each having a recess extending inwardly from its periphery, first frame means for operatively interconnecting said plate members, a plurality of second plate members each adapted to be secured to the end of a second pile section and each having a recess extending inwardly from its periphery,

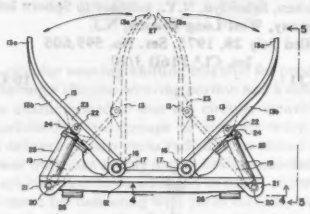
and a second frame means for operatively interconnecting said second plate members, each of said first plate members adapted to bear against a corresponding one of said second plate members prior to connection of said first and second pile sections with the recesses in said corresponding first and second plate members registering, and a plurality of locking pins each of substantially I-shaped cross-section and adapted to be inserted and retained in one of said pairs of registering recesses, substantially the entire underfaces of the heads of each locking pin bearing against the outer surfaces of the abutting plate members.

3,961,492

MACHINE FOR AND METHOD OF STEMMING BLAST HOLES

Jay K. Buehler; Thomas R. Carlson, both of Salt Lake City, and Alvin J. McIntosh, Midvale, all of Utah, assignors to Kennecott Copper Corporation, New York City, N.Y.

Filed Feb. 7, 1975, Ser. No. 548,029
Int. Cl.² E02D *29/12*; E02B *1/00*; A01B *63/00*
U.S. Cl. 61—63 7 Claims



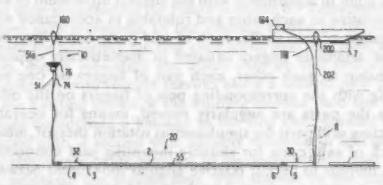
1. A machine for stemming blast holes, comprising a vehicle capable of being driven forwardly and backwardly; a substantially solely upstanding pusher blade extending transversely across the vehicle at an end thereof for pushing loose earth materials along a ground surface; a pair of auxiliary earthmoving blades pivotally mounted on said pusher blade in mutually spaced relationship transversely of the vehicle and swingable toward and away from each other, said auxiliary blades having tip portions inwardly turned so as to be in confronting relationship when the blades are swung together; and means for swinging the blades outwardly away from each other and inwardly toward each other.

3,961,493

METHODS AND APPARATUS FOR PURGING LIQUID FROM AN OFFSHORE PIPELINE AND/OR SCANNING A PIPELINE INTERIOR

Clyde Earvin Nolan, Jr., Houston; John Paul Soland, Alvin, and William Samuel Tillinghast, Humble, all of Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed Jan. 22, 1975, Ser. No. 542,900
Int. Cl.² F16L *45/00*; B08B *1/00*
U.S. Cl. 61—72.3 28 Claims



19. Pipeline purging apparatus for passing pipeline pigs from a first pipeline means end to a second, submerged pipeline means end, said apparatus comprising:

pig launcher means attached to said pipeline means at said first pipeline means end, said pig launcher means including

first compartment means containing at least one pig element, and

means for injecting pressurized gas behind said pig element to propel said pig element through said pipeline means toward said second pipeline means end; and

pig receiver means attached to said pipeline means at said second, submerged pipeline means end, said pig receiver means including

means for exhausting fluid displaced by said pig element,

second compartment means for receiving said propelled pig element, and

means detachably connecting said pig receiving means with said pipeline to permit the concurrent removal of said pig receiving means and a pig element from said pipeline means;

said pig receiver means including

means for exhausting a portion of said pressurized, pig element propelling gas into the ambient water to indicate arrival of said pig element within said pig receiver means; and

said pig launcher means including

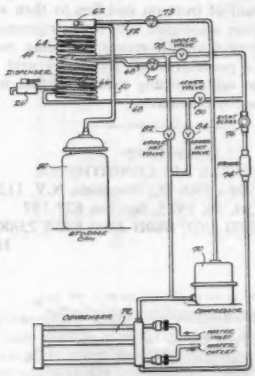
means for exhausting pressurized, pig element propelling gas into the ambient water in response to advancement of a pig element being launched.

3,961,494

SOFT FOOD MIX DISPENSING APPARATUS AND METHOD

Robert Schaefer, Lakeview, and Richard L. Hammell, Lima, both of Ohio, assignors to The Kroger Company, Cincinnati, Ohio

Filed Feb. 14, 1975, Ser. No. 550,039
Int. Cl.² A23G *9/00*; F25C *5/08*
U.S. Cl. 62—73 14 Claims



1. An apparatus for dispensing a soft food mix comprising:

a source of soft food mix at a pressure above atmospheric pressure,

heat exchanger means for storing a quantity of said mix without mechanical agitation,

valve means coupled to said heat exchanger means for selectively dispensing mix from said heat exchanger,

means coupling said source to said heat exchanger means for transferring mix from said source to said heat exchanger means as said mix is dispensed from said heat exchanger,

refrigeration means in operative relation with said heat exchanger means for cooling the mix in said heat exchanger means so as to congeal a portion of the mix and

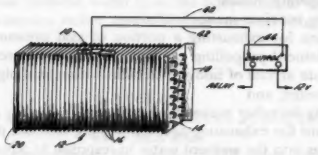
heating means in operative relation with said heat exchanger means for at least periodically heating the mix in said heat exchanger means in response to a buildup of the congealed mix in the heat exchanger which buildup would otherwise prevent flow of the fluid mix.

3,961,495

FROST DETECTING DEVICE FOR A REFRIGERATION APPARATUS

Guy Beauvent, Loretteville, and Jacques Roy, Ste-Foy, both of Canada, assignors to Centre de Recherche Industrielle du Quebec, Canada

Filed Mar. 26, 1975, Ser. No. 562,053
Int. Cl.² F25D *21/02*
U.S. Cl. 62—140 **8 Claims**



1. A frost detecting device for use in a refrigeration apparatus of the type having refrigerant-carrying coils equipped with fins comprising:

a support adapted to be fixedly mounted to said fins;

infrared radiation emitting means mounted to said support;

radiation sensitive means mounted to said support in spaced relationship with said emitting means; said sensitive means and said emitting means having a common radiation axis;

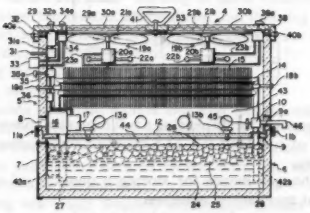
control circuit means electrically connected to said emitting means and to said sensitive means for detecting an unacceptable amount of frost on said fins to then actuate a defrosting system associated with the refrigeration apparatus, said control circuit means including means for pulsating at a predetermined frequency said infrared radiation from said emitting means so that undesired signals are thereby eliminated.

3,961,496

PORTABLE AIR CONDITIONER

Paul H. Y. Ku, 47-50 - 59th St., Woodside, N.Y. 11377

Filed Oct. 30, 1975, Ser. No. 627,197
Int. Cl.² F25D *3/02*; B60H *3/04*; F25B *25/00*
U.S. Cl. 62—459 **10 Claims**



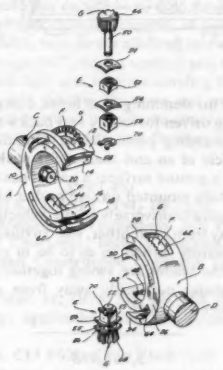
1. A portable air conditioning device comprising in combination: container means for retaining water and for providing insulation against heat transfer through walls thereof and for providing support structure for elements mounted thereon; said support structure including a dividing partition substantially dividing interior space of the container means into an ice compartment and a heat-transfer compartment, said ice compartment and said heat-transfer compartment being substantially segregated from one-another; pump and motor means for pumping water in closed cycle from said ice compartment through said heat-transfer compartment and back to said ice compartment; heat-transfer means for circulating warm air in heat-exchange relationship with cool water when circulated in said closed cycle, within said heat-transfer compartment, and for intaking said warm air from and exterior source and for evacuating cooled air from the heat-transfer compartment to an exterior location to be cooled; said heat-transfer means including fans located above said closed cycle, the container means having intake ports within lower portions of walls of said heat-transfer compartment and having exhaust ports within upper portions of walls of said heat-transfer compartment and the heat-transfer means further including water-circulation conduits cycling water from and to the ice compartment, and said water-circulation conduits being mounted substantially above a level of said intake ports.

3,961,497

UNIVERSAL JOINT

William A. Cohen, Brooklyn, N.Y., assignor to Sphero International Company, West Long Branch, N.J.

Filed July 28, 1975, Ser. No. 599,605
Int. Cl.² F16D *3/30*
U.S. Cl. 64—21 **10 Claims**



1. A joint for transmitting torque at the uniform angular velocity between a first and a second rotatable shaft angularly movable relative to each other, said joint comprising first and second parts operatively connected to said first and second shafts, respectively, said parts being relatively movable about a given point in accordance with the angular movement of said shafts relative to each other and rotatable in accordance with the rotation of said shafts, each of said parts comprising two pairs of articulate fingers situated in diametrically opposed relationship to each other, each pair of fingers on one part meshing with the corresponding pair of fingers on the other part as the parts are angularly moved, means for operably connecting said parts for simultaneous rotation thereof, means on each of said parts for slidably mounting said connecting means thereto to permit relative angular movement between said connecting means and each of said parts, respectively, and means for maintaining said connecting means at a position equidistant from the axis of said shafts throughout the range of angular movement thereof.

3,961,498
MACHINE FOR PRODUCING CIRCULAR TEXTILE WEBS

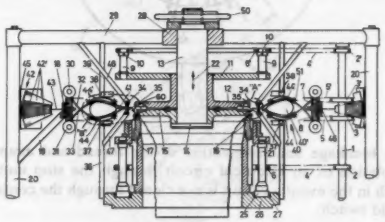
Hans Georg Braunschweiler, Winterthur, Switzerland, assignor to Uniroyal Inc., New York, N.Y.

Continuation of Ser. No. 427,498, Dec. 26, 1973. This application Apr. 14, 1975, Ser. No. 567,994

Claims priority, application Switzerland, Jan. 5, 1973, 91/73

Int. Cl.² D04B 9/12

U.S. Cl. 66—13 **7 Claims**



1. A circular weaving-knitting machine for producing textile webs, having a circular weaving portion and a circular knitting portion characterized in that the circular weaving portion of the machine has two groups of separate warp yarn supply means delivering warp yarns radially to a closed curve, upper and lower weft yarn supply means having associated therewith weft yarn insertion bows arranged in rotary manner about the closed curve for delivering weft yarns thereto, combined with a circular knitting portion having needle-containing means in which knitting needles operate to produce stitches in such a way that the weaving line of the weaving portion described by said rotating insertion bows with their yarn discharge openings corresponds with the knitting line of the knitting portion to form a common weaving-knitting line, and that the weft yarns are inserted from each insertion bow in succession by the rotation of upper and lower insertion bows in sheds which are formed from the warp yarns by the insertion bows by the synchronized driving of the circular weaving and knitting portions of the machine, said weft yarn insertions being formed into stitches as programmed by the controlled operation of the needles or retained as a weft yarn insertion.

3,961,499
MECHANISM FOR SUPPORTING NEEDLE CAMS ON KNITTING MACHINES

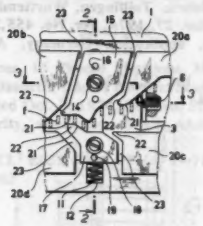
Bohumil Stepánek, and Rudolf Bandoch, both of Brno, Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Filed Mar. 14, 1973, Ser. No. 341,266

Int. Cl.² D04B 9/00

U.S. Cl. 66—54 **3 Claims**

1. A supporting device for the needle cams on knitting machines having a plurality of knitting needles controlled by the needle cams, comprising a supporting frame member, a first slide mounted on the frame member for adjustment along a first path transverse to the knitting stroke of the needles, means for adjusting the first slide along said first path, a stitch cam, means mounting the stitch cam on the first slide for adjustment with respect thereto along a second path parallel to the knitting stroke of the knitting needles, said last named means comprising a passage in the first slide parallel to said second path, a second slide slidably mounted in said passage, the stitch cam being secured to the second slide, and means for adjusting the second slide with respect to the first slide along said second path, the means for adjusting the first slide along said first path and the means for adjusting the second slide with respect to the first slide being accessible to an operator and adjustable by him during the operation of the knitting machine, the means to adjust the first slide relative to the frame member comprising an adjusting cam and an adjusting



cam follower means mounted on said first slide acting between the frame member and the first slide.

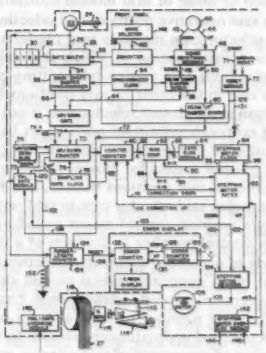
3,961,500
YARN RUNNER-LENGTH CONTROLLER FOR KNITTING MACHINES

Robert L. Braley, Thomaston; Mircea Tenenbaum, Hamden, and Edward J. Milano, Bristol, all of Conn., assignors to Gould Inc., Chicago, Ill.

Filed Oct. 15, 1974, Ser. No. 514,812

Int. Cl.² D04B 23/00, 27/00

U.S. Cl. 66—210 **48 Claims**



1. A yarn runner-length controller for knitting machines having a main shaft and at least one beam section comprising:

A. a first metering means for continuously monitoring the length of yarn used to produce the fabric as the yarns are unwound from the beam section, and producing a length output signal corresponding thereto;

B. a second metering means for continuously monitoring the angular movement of the main shaft;

C. a metering means convertor connected to the second metering means for transforming the output of the second metering means to a continuous target output signal related to a desired yarn runner-length;

D. an error monitoring means connected to the outpu signals of the first metering means and the convertor fo. producing an error signal related to their difference; and

E. a means for adjusting the angular velocity of the beam section in response to the error signal, whereby the length of yarn unwound from the beam section will approximate the desired runner-length.

3,961,501
NEEDLE SELECTING ARRANGEMENT FOR A KNITTING MACHINE

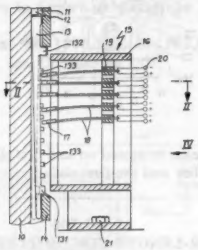
Johann Martinetz, Hechingen, Germany, assignor to Mayer & Cie. Maschinenfabrik, Tailfingen, Wurttemberg, Germany

Filed Mar. 27, 1974, Ser. No. 455,205

Claims priority, application Germany, Apr. 4, 1973, 2316794

Int. Cl.² D04B *15/66*

U.S. Cl. 66—154 A **7 Claims**



1. In a knitting machine, in combination, a carrier; a plurality of knitting-needle units, each knitting-needle unit being comprised of a needle portion and a motion-transmitting portion mounted on said carrier for longitudinal reciprocation and movable between an operative position and a non-operative position; motion-transmitting means for imparting longitudinal motion to those of said motion-transmitting portions which are in said operative position; and selecting cam means including a selector cam movable in a predetermined direction between a first position in which said selector cam is operative for causing said motion-transmitting portions to be moved from one to the other of said positions thereof and a second position in which said selector cam is not operative for causing said motion-transmitting portions to be moved from one to said other of said positions, said selector cam having an engagement portion, means for moving said slector cam from one to the other of said positions thereof, and biasing means for normally urging said selector cam to said one of said positions; and cam position control means including at least one cam position control member in the form of a flexural detent member made of a material which upon alternate applications and removal of an energizing signal to said detent member undergoes alternate opposite dimensional changes causing said flexural detent member to bend about a predetermined bending axis oriented approximately parallel to said predetermined direction of movement of said selector cam to become engaged with and disengaged from said engagement portion, said flexural detent member being so disposed that when engaged with said engaging portion said detent member opposes the biasing force of said biasing means by exerting upon said selector cam a holding force in direction approximately parallel to said predetermined bending axis.

3,961,502
SAFETY RING

James N. Lawson, Fairmont, N.C., assignor to Musselwhite Enterprises, Inc., Lumberton, N.C., a part interest

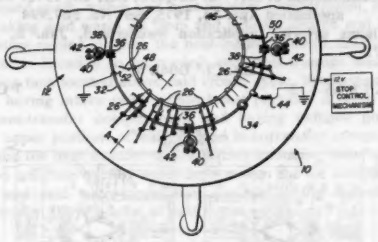
Filed Jan. 24, 1973, Ser. No. 326,399

The portion of the term of this patent subsequent to June 8, 1992, has been disclaimed.

Int. Cl.² D04B *35/14, 35/16*

U.S. Cl. 66—163 **10 Claims**

1. A stop mechanism for a knitting machine, comprising, in combination: first means for assuring stopping of the knitting machine in the event of thread breakage and failure of the normal stop motion switches; second means for forming a portion of an electrical circuit; and a stop motion switch associated with a thread of a knitting machine, and provided with contacts connected to an electrically conductive annulus, and with said first means including an electrically conducting element arranged for contacting the circuit forming means



upon breakage and termination of the thread and assuring completion of an electrical circuit through the stop motion switch in the event a circuit is not closed through the contacts of said switch.

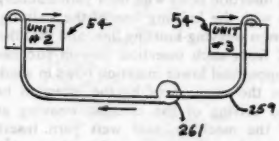
3,961,503
LAUNDERING APPARATUS AND METHOD, CONTINUOUS WITH RECIRCULATION

Frederick W. Grantham, 600 S. Lairport St., El Segundo, Calif. 90245

Continuation-in-part of Ser. No. 16,318, March 4, 1970, Pat. No. 3,693,382. This application Sept. 21, 1972, Ser. No. 290,862

Int. Cl.² D06F *31/00*

U.S. Cl. 68—27 **6 Claims**



1. Laundry apparatus comprising:

a plurality of laundry units each having entrance and exit ends, said units being arranged serially;

first pump means associated with each of said units for moving liquid with laundry goods through the units from entrance ends to exit ends thereof;

means for transferring wet laundry goods from the exit end of each upstream unit to the entrance end of an adjacent downstream unit; and

second pump means for circulating liquid through at least one of said units, the second pump means being separately operative from the first pump means.

3,961,504
VEHICULAR TRUNK LID LATCH ASSEMBLY

Raymond G. Sprecher, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

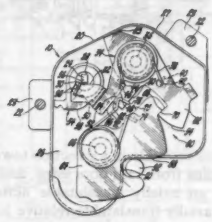
Filed Apr. 3, 1975, Ser. No. 564,619

Int. Cl.² E05B *63/00*

U.S. Cl. 70—1.5 **4 Claims**

1. For use with an automotive trunk lid having a lock cylinder assembly mounted on an outer wall thereof, a latch assembly comprising a housing mounted on an inner wall of said trunk lid, a cam member rotatably mounted in said housing and having a rectangular opening formed therein, a shaft operatively extending from said lock cylinder assembly and through said rectangular opening for rotating said cam mem-

ber in response to manual key actuation of said lock cylinder assembly, an abutment edge formed on the extended end of said shaft, first and second latching levers separately pivotally mounted in said housing, respective cooperative latching surfaces formed on said first and second latching levers, first spring means operatively connected between said first and second latching levers for retaining said latching surfaces together when in a latched condition and for urging said latching surfaces apart when in an unlatched condition, a camming lever having a cam surface and an abutment edge formed thereon and being pivotally mounted in said housing and adapted to have said cam surface positioned intermediate said



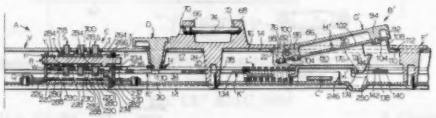
cam member and said first latching lever, and second spring means urging said abutment edge of said camming lever into contact with said abutment edge of said shaft, said camming lever thereby being adapted to being pivoted away from said abutment edge of said shaft by said cam member against the force of said second spring means to sequentially pivot said first latching lever in response to rotation of said cam member by said lock cylinder assembly via said shaft, until such time as said lock cylinder assembly and said shaft are removed from said trunk lid after which said second coil spring will rotate said camming lever out of the path of said cam member, thereby preventing the unlatching of said latching levers from outside said trunk lid via rotation of said cam member.

3,961,505

LATCHING DEVICE INCLUDING COMBINATION LOCKING MEANS

Charles S. Gehrie, Montclair, and Lazlo Bako, Woodcliff Lake, both of N.J., assignors to Presto Lock Company, Elmwood Park, N.J.

Filed Nov. 5, 1974, Ser. No. 521,040
Int. Cl.² E05B *65/52*
U.S. Cl. 70—66 **15 Claims**



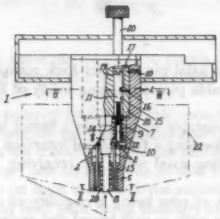
1. A latching device cooperable with a pair of spaced hasps comprising a pair of spaced latch members having lowered and raised positions for latching and unlatching conditions, respectively, biasing means for urging the latch members into raised position, a manually operable actuating member movable to latching and release positions, longitudinally movable engagement means associated with the actuating member, the engagement means being engageable with respective latch members for holding the latch members in lowered position when the actuating member is in the latching position and being movable out of engagement with the latch members when the actuating member is moved into the release position, thereby enabling the latch members to be moved to raised position by the biasing means, and a longitudinally movable plug member associated with each latch member for engaging a hasp when the latch member is in lowered position, the plug member being disengaged from the hasp when the latch member is in raised position.

3,961,506

LOCKS

Antonio L. Perez, 15 Phoebe Mansions, Middle Ave., North End, Port Elizabeth, Cape Province, South Africa

Filed Oct. 7, 1974, Ser. No. 513,039
Claims priority, application South Africa, Oct. 9, 1973, 73/7867
Int. Cl.² E05B *9/04, 15/14, 19/18, 27/00*
U.S. Cl. 70—363 **5 Claims**



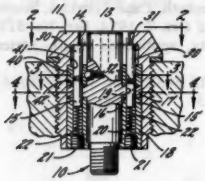
1. A lock and key assembly wherein the key is adapted to co-operate with the lock, the lock comprising:
- a substantially cylindrical hollow body including a key receiving opening at one end;
- an axial pintle centrally rotatably mounted in said body, having a first shaped end terminating in said key receiving opening and a second end projecting through a second end of said body and connected to a movable locking bolt;
- a plurality of pin tumblers equally spaced apart circumferentially and mounted longitudinally in a space between said pintle and said body so as to be rotatable about the longitudinal axis of the pintle and longitudinally movable in said body and wherein each tumbler is extensible in length and comprises a pin formation extending inwardly from said key receiving opening and co-operating screw threaded male and female parts with the one part terminating near said second end of the body and having a transverse recess in its side;
- means for biasing said pin tumblers towards the key receiving opening of said body;
- a plurality of radially inwardly extending projections in said body arranged to allow rotation of said pintle and tumblers when said recesses in the tumblers are aligned therewith; and
- openings in said second end of the body to enable each of said one tumbler part to be manipulated to vary the tumbler length;
- and the key comprising a substantially cylindrical hollow body having one end shaped to fit into said key receiving opening in the lock body;
- an aperture centrally formed in said one end complementary in transverse shape to the shaped pintle end;
- a plurality of spindles equally spaced apart circumferentially in said key body which extend in passages formed in said one end towards the opposite end of the body, the spindles at said opposite end being screw threaded onto the key body and openings being provided in this end to enable adjustable manipulation of the spindles.

3,961,507

RESETTABLE AXIAL PIN TUMBLER LOCK

Morris Falk, Palm Springs, Calif., assignor to Fork Lock Corporation, River Grove, Ill.

Filed Jan. 17, 1975, Ser. No. 542,039
Int. Cl.² E05B 25/00
U.S. Cl. 70—363 6 Claims



1. A resettable axial pin tumbler lock comprising,
a. axially movable pins consisting solely of first and second sets of pins,
b. a spindle rotatably mounted in a barrel with the spindle and barrel forming a first radial interface and a plurality of cooperating axial wells for receiving the first set of axial pins,
c. the first set of pins being a plurality of driver pins disposed in the wells in said barrel and spring biased across said radial interface into the wells in said spindle to lock said spindle against rotation in said barrel,
d. a reset ring rotatably mounted in said barrel with the reset ring and the spindle forming a second radial interface and a plurality of cooperating axial wells for receiving the second set of axial pins,
e. said second set of pins being a plurality of reset pins disposed in the wells in said spindle and reset ring in axial alignment and engagement with said driver pins so that the spring bias on the driver pin also applies a biasing force to the reset pins,
f. said spindle and barrel forming a narrow annular keyway for receiving a tubular key for engaging said reset pins and axially displacing both the reset pins and the driver pins against the spring bias on said driver pins to align the radial interfaces between the reset pins and driver pins either with the reset ring-spindle interface to permit rotation of the reset ring relative to the spindle while locking the spindle to the barrel, or with the spindle-barrel interface to permit rotation of the spindle relative to the barrel while locking the spindle to the reset ring,
g. said reset pins having a preselected combination of different axial lengths so that rotation of the reset ring, when all the pin interfaces are aligned with the reset ring-spindle interface, changes the combination of axial pin displacements required to align all the pin interfaces with the spindle-barrel interface.

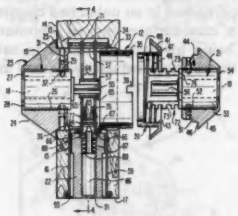
3,961,508

LOCK CYLINDER HAVING A RELEASABLE CATCH

Alois Crepinsek, El Paso, Tex., assignor to Alois Crepinsek; Lee A. Chagra and Dave McFadden, all of El Paso, Tex., part interest to each

Filed Dec. 12, 1974, Ser. No. 531,926
Int. Cl.² E05B 9/08
U.S. Cl. 70—370 5 Claims

1. In a door lock assembly, lock cylinder means at least partially housed within a housing to pass into a transverse bore in a door to be locked near one edge thereof, said lock cylinder means disposed in mechanical operative association with a lock bolt assembly carried by the door for effecting translation of the lock bolt into and out of the edge portion of the door by rotation of a portion of said lock cylinder means, fastening means releasably fastening said lock cylinder means to a structure disposed within said transverse bore in the door, and release means operatively associated with said fastening means and accessible to an operator when installed in the door only from said edge of the door when the door is at least partially open for releasing said fastening means to permit removal of the lock cylinder means, said release means including actuating means movable in a direction toward said releasable fastening means from said door edge, and said actuating means including an axially translatable actuating member carried with and axially translatable relative to the lock bolt, and spring bias means for biasing said actuating member relative to said bolt so as to urge said actuating member out of operative engagement with said fastening means.

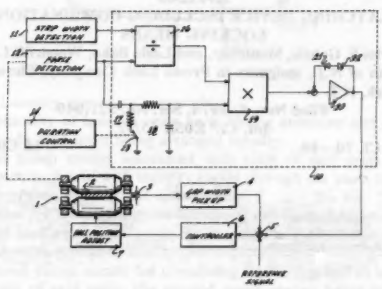


3,961,509

ROLL GAP CONTROL

Gunter Dohrmann, Neukrug, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung, Bremen, Germany

Filed May 12, 1975, Ser. No. 576,566
Claims priority, application Germany, May 21, 1974, 2424615
Int. Cl.² B21B 37/08
U.S. Cl. 72—6 5 Claims



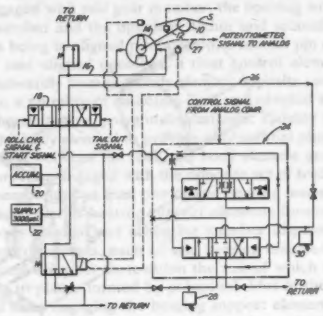
1. In an apparatus for controlling the gap between the rolls of a mill in response to an error signal which represents deviation of the necessary condition for rolling from the existing one, the apparatus including means being responsive to that error signal to control the relative position between the rolls, the improvement comprising:
means for detecting the force as exerted by the rolls and providing a first signal representing said force, and a second signal representing the time derivative of said force;
means for detecting the width of the stock and providing a third signal representative thereof; and
circuit means connected to receive the first, second and third signals and providing a composite signal and superimposing it upon said error signal.

3,961,510

TENSION DEVICE FOR A ROLLING MILL AND THE LIKE

Daniel Charles Kovacs, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed July 11, 1975, Ser. No. 595,195
Int. Cl.² B21B 37/06, 39/08
U.S. Cl. 72—20 5 Claims



1. In a tensioning device for continually moving material, such as rolled metallic strip,

means arranged to contact one of the surfaces of the strip in a manner to deflect the strip out of a datum path of travel to impose a tension thereon,

a fluid actuator means operably connected to said strip contacting means for displacing said strip contacting means towards said strip,

said actuating means having two ports,

fluid servomeans,

means for connecting a first pressure source to one of said ports of said actuator,

means for connecting said servo to the other port of said actuator in a manner to establish a pressure difference between said two ports,

a computer,

means for producing a signal representative of the position of said strip contacting means relative to said datum position and for sending said signal to said computer,

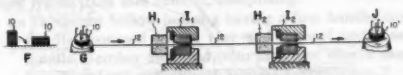
said computer including means for employing said signal for calculating the required pressure for said actuator for a desired tension and for controlling the operation of said servo in accordance therewith.

3,961,511

METAL DRAWING MIXTURE

John W. Wolfe, 323 North St., McDonald, Pa. 15057

Filed Jan. 9, 1975, Ser. No. 539,727
Int. Cl.² B21C 9/00
U.S. Cl. 72—42 8 Claims



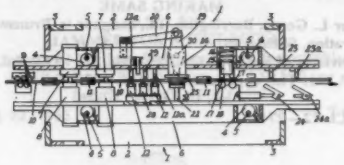
1. An improved method of die-drawing a relatively hard metal workpiece which comprises, cleaning the surface of the workpiece and applying an adherent dried-on alkaline coating thereto, providing a dry miscible powder containing substantially equally proportioned minor quantities of soap and graphite powders and a major quantity of fire clay powder, applying the dry miscible powder to and adhering it on the alkaline coating, and thereafter forming a protective surface film on and reducing the workpiece by moving it through a draw die with the miscible powder thereon.

3,961,512

METAL PUNCHING MACHINE

Andrew Mentis, 96 Kloof Road, Bedfordview, Johannesburg, Transvaal Province, South Africa

Filed Mar. 19, 1975, Ser. No. 559,962
Claims priority, application South Africa, Mar. 25, 1974, 74/1915
Int. Cl.² B26D 1/56; B23D 15/02; B21D 31/06
U.S. Cl. 72—53 15 Claims



1. Punching apparatus adapted to punch a series of spaced holes along the length of a strip of metal comprising;

a framework,

at least two pairs of shafts rotatably mounted on the frame work wherein the pairs are spaced apart along a feed path defined in the framework and the shafts of each pair are spaced apart one on each side of said feed path,

an eccentric on each shaft with the eccentrics on the same side of said feed path being similarly orientated and the eccentrics associated with each pair of shafts being orientated approximately 180° apart,

a beam on each side of the feed path mounted on the corresponding eccentrics, the beams being located in parallel with the feed path,

a punch on one beam extending towards the other beam,

a complementary die on said other beam directly opposite said punch, and

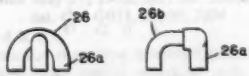
means for holding and moving a strip of metal along said feed path comprising a member attached to and movable in unison with one of said beams, the member comprising a slide slidable in a guide transverse to said beam, said slide being spring biassed away from the beam toward the feed path and carrying two lugs thereon spaced apart by one or a multiple of pitches to engage an aperture punched in the metal strip during a first half cycle of the apparatus when the beams are in close proximity to each other and to hold the strip during punching and to move the strip forward one pitch immediately after punching as the shafts are rotated in unison with the shafts on opposite sides of the feed path rotating in opposite directions.

3,961,513

METHOD OF MAKING PIPE FITTINGS

H. La Mar Stahly, Noppanee, Ind., assignor to Elkhart Products Corporation, Elkhart, Ind.

Filed Apr. 11, 1975, Ser. No. 567,424
Int. Cl.² B21D 51/16
U.S. Cl. 72—58 3 Claims



1. A method for producing a wrought fitting having three legs arranged in a generally T-shape comprising the steps of:

cold deforming a solid plug of malleable metal to provide a tube closed at one end and having a tube wall thickness adjacent said one end greater than the tube wall thickness remote from said one end,

confining said tube in die means having relief zones on each side of said tube adapted to develop curved legs extending from the sides of said tube,

further deforming said tube in a single step by utilizing a ram to extrude said tube while internally pressurizing said tube with fluid to provide a pair of curved legs adjacent said one end, and

severing the ends of said legs.

3,961,514

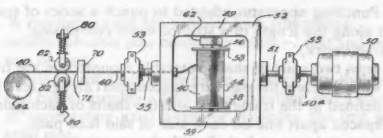
TWIST DRAWN WIRE, PROCESS AND APPARATUS FOR MAKING SAME

Arthur L. Geary, Barrington, Ill., assignor to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 334,223, Feb. 21, 1973, Pat. No. 3,883,371. This application Feb. 18, 1975, Ser. No. 550,517

Int. Cl.² B21C *1/00*

U.S. Cl. 72—274 **5 Claims**



1. A method of increasing the torsional strength of metal wire by the steps of:

a. cold drawing the wire to at least a 75% reduction in cross-sectional area;

b. twisting the wire while in a plastically deforming state substantially within the reducing zone of the die;

c. confining the wire twist in the reducing zone of the die by means of cooperating twist arresting rolls; and

d. preventing over twist of the wire.

3,961,515

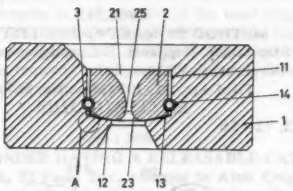
ALTERNATE SUPPORT FOR A DRAWING DIE MADE OF HARD METAL OR DIAMOND

Fritz Schmale, Buchenweg 11, 5990 Altena 8, and Hans Theis, Amselweg 3, 6349 Mittenaar,Offenbach, both of Germany

Filed June 24, 1975, Ser. No. 589,822

Int. Cl.² B21C *3/00*

U.S. Cl. 72—285 **5 Claims**



1. An alternate support for a drawing die made of hard metal, comprising:

a support having a bore formed with a shoulder, and

hollow clamping ring means for clamping a drawing die and said support, and the drawing die being supported by said shoulder in said bore in said support, said drawing die being swingingly supported on said shoulder within said support.

3,961,516

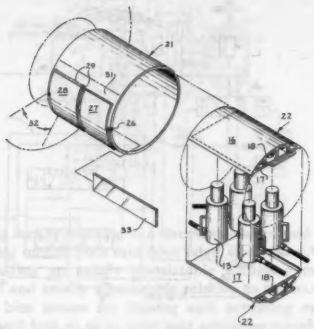
APPARATUS AND METHOD FOR RE-FORMING AND MAINTAINING THE CIRCULAR SHAPE OF A DEFORMED ROLL OF MATERIAL

Jack E. Priester, 1560 Marcia Ave., Modesto, Calif. 95350

Filed Jan. 8, 1975, Ser. No. 539,296

Int. Cl.² B21B *17/02*

U.S. Cl. 72—370 **6 Claims**



1. A method for re-forming a deformed annular coil of material of a type to be unwound from the coil and cut into predetermined lengths thereof and for preserving the re-formed shape of said coil comprising the steps of inserting into the center opening of said coil a radially expansible annular coil liner formed of a band of material wrapped cylindrically to dispose the end edges of said band in closely spaced confronting relation separated by a gap therebetween, radially urging said liner from within said center opening with sufficient force to round out and re-form the center opening and coil while spacing the confronting ends of said liner, inserting a spacer element between the spaced apart ends of said liner to retain said liner in its expanded condition upon release of the radial urging, and thereafter removing means for radially expanding said liner from said center opening.

3,961,517

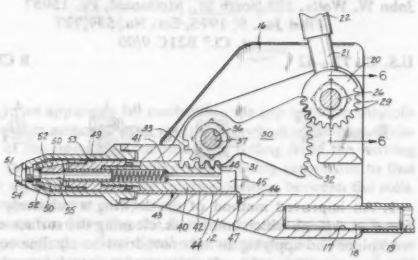
RIVET SETTING TOOL

Anthony E. DiMaio, Georgetown, Mass., assignor to Marson Fastener Corporation, Chelsea, Mass.

Continuation of Ser. No. 189,993, Oct. 18, 1971, abandoned. This application May 13, 1974, Ser. No. 469,592

Int. Cl.² B21J *15/34*

U.S. Cl. 72—391 **6 Claims**



1. A heavy duty manually operated rivet setting tool adapted to set blind rivets which include an eyelet portion and a projecting mandrel portion, said tool comprising, in combination, an elongated body element, a fixed handle secured to one end of said body element and projecting outwardly there-

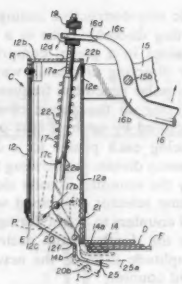
from, a pivotally movable handle adjacent said fixed handle projecting outwardly from said body element a gear portion secured to said movable handle disposed between first bearing means and provided with an opening in said portion in alignment with openings within said first bearing means, a first pin disposed within the openings, an intermediate elongated pinion member disposed between second bearing means and having teeth at opposite ends thereof and provided with an opening therewithin, one set of teeth of said pinion member being engaged with said gear member, the opening within said pinion member and the openings within said second bearing members being in aligned relationship, a second pin disposed between said aligned openings; a rivet control element projecting outwardly from said body element opposite said handle members, a plurality of co-acting jaws and coupled actuating means therewithin, a polygonal-sided rack slidably movable against the body element to provide a substantial planar load-bearing area between the rack and body element and having teeth thereupon engaged with the opposite set of teeth of said pinion member and at least one of said bearing means including a spaced pair of bearing support elements forming a part of the body element and a bearing member disposed within said support elements, each of said bearing members having a cylindrical chamber therewithin the axis of which chamber is parallel to planes formed by polygonal sides of the bearing with said sides engaging the bearing support element so that the bearing is unable to rotate and each polygonal sided bearing providing substantial load-bearing planar area between the bearing support element and the bearing member through which pressure is applied by the bearing member to the bearing support element.

3,961,518

CRIMPING DEVICE

Frank J. Osbolt, 4410 Santee, Houston, Tex. 77018

Filed Nov. 11, 1974, Ser. No. 522,478
Int. Cl.² B21D *5/01*
U.S. Cl. 72—409 **7 Claims**



1. Apparatus for crimping a vehicle door panel or the like onto the vehicle door frame without having to remove said door frame from said vehicle, comprising:

an elongated hollow housing having a first handle member fixedly mounted at the rear end thereof and a second handle member mounted onto said first handle member for pivotal movement with respect thereto;

an actuator shaft member positioned in said elongated housing and connected to said second handle member for movement in response to pivotal movement of said second handle member;

a crimping member positioned in said housing and having a crimping portion extending outwardly from the front of the housing;

means mounting said crimping member onto said housing at the front end thereof for pivotal movement with respect to said housing and means pivotally connecting said crimping member to said actuator shaft; and

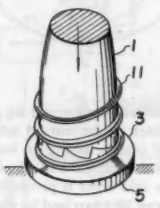
said housing having an anvil face mounted at the front end thereof such that a door frame and panel are receivable between said crimping portion and said anvil face, said crimping portion being rotated downwardly and inwardly toward said anvil face and having means for adjusting the amount of rotation of said crimping member thereby crimping said door panel to said frame in response to movement of said second handle member toward said first handle member.

3,961,519

HAMMER FOR SHEET METAL

Yoshio Kurata, 2-17, Joto 5-chome, Kofu, Yamanashi, Japan

Filed Dec. 19, 1974, Ser. No. 534,655
Int. Cl.² B21D *1/12, 25/00*
U.S. Cl. 72—465 **7 Claims**



1. A hammer head for working sheet metal to straighten pieces of sheet metal which have been deformed, causing surface bumps and depressions, said hammer head comprising:

a. an elongated hammer head body with a circular front surface piece at the front of said body;

b. a plurality of hammer face sections at said front surface piece, each section extending substantially from the circular center of said circular front surface piece and slanting towards the axis of elongation of said body, each section being similar to the other sections and slanting in the same direction as viewed when traveling around the periphery of said circular front surface piece;

c. a cylindrical adapter in contact with said front surface piece having adapter face sections corresponding to the hammer face sections and in contact therewith; and,

d. resilient means holding said adapter and front face pieces in contact, whereby, when said hammer head strikes a workpiece, the adapter face sections slide on the hammer face sections imparting a sliding and turning motion at the time of the hammer blow.

3,961,520

APPARATUS FOR MECHANICALLY EXERCISING BOURDON TUBE GAUGE

Tommie R. Modgling, Chino, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 27, 1975, Ser. No. 580,653
Int. Cl.² G01L *27/00, 7/04*
U.S. Cl. 73—4 R **5 Claims**

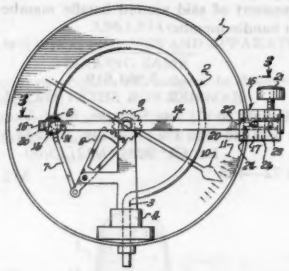
1. Apparatus for exercising a housed Bourdon tube gage having a coiled tube portion provided with a sealed end adapted upon variations in interior tube pressure to move arcuately in a predetermined path, said gage further being provided with a scale and with linkage means for translating said arcuate movements into scale pointer movements; said apparatus comprising:

an elongate pivotal lever arm having inner and outer ends,

a tube-engaging platen carried by said arm near its inner end,

a base plate pivotally supporting the outer end of said arm, said plate being adapted to be secured firmly on said gage

housing in a fixed position with said pivotal arm extending inwardly toward said sealed end of the Bourdon tube, and manually-operable mechanical means carried by the base plate outwardly of said lever arm support for exerting pivotal pressure on said lever arm outer end,



said platen being adjustably carried by said lever arm for enabling said platen to be moved into a tube-engaging position and said platen having an inclined engagement surface for permitting the tube to move in an unrestrained natural arc when said lever is pivotedly moved,

whereby said tube can be exercised by pivotally moving said tube repeatedly through its full scale arc.

3,961,521

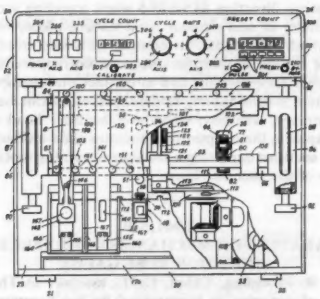
TOOTH TESTING SYSTEM AND MACHINE

Ronald L. Bailey, No. 11 Flamingo, St. Peters, Mo. 63376; Joseph C. Muhler, R.R. 2, Sturgis, Mich. 49091, and Mark S. Putt, 4034 Westlane Drive, Fort Wayne, Ind. 46805

Filed May 31, 1974, Ser. No. 474,960

Int. Cl.² G01N *3/56*

U.S. Cl. 73—7 **29 Claims**



1. In a machine for applying rubbing tests to specimens, such as tests for the effects of polishing, cleaning, scratching and abrasion agents on human teeth, and the like: a base, a specimen holder means, a support means for supporting a rubbing device, the specimen holder means and the support means being mounted on the base in proximity so that a specimen on the holder means can be rubbed by the rubbing device and one of said means being laterally movable on the base relatively to the other, and driving mechanism for transversely moving the laterally movable one of the means relative to the other to produce a path of movement of the rubbing device across a specimen in the holder and return, the driving mechanism including means to cause the movement of the said laterally movable one of the means across the specimen to be in one path and its return movement to be in a different path, to reduce grooving of the specimen by repeated motion forth and back along the same path.

3,961,522

APPARATUS FOR RECORDING DISCONTINUITIES

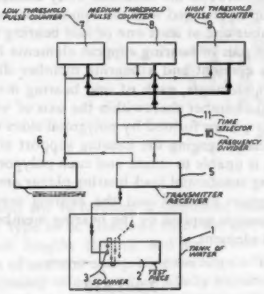
Joseph-Bernard Leon Kilen, rue Fernand Huet, 72, B.4920 Embourg, Belgium

Filed May 21, 1974, Ser. No. 472,036

Claims priority, application Belgium, June 6, 1973, 44191

Int. Cl.² G01N *29/04*

U.S. Cl. 73—67 **3 Claims**



1. An ultrasonic non-destructive testing apparatus for detecting and counting discontinuities in a given volume and particularly inclusions in a piece, comprising an ultrasonic waves transmitter directing ultrasonic waves into said given volume at a given pulse repetition frequency, pulse counters capable of registering all the pulses constituting the video signal entirely received by each of said pulse counters, said pulse counters being each preset to a different actuation threshold, a frequency divider for dividing the pulse repetition frequency to vary the sounding density along the path of the scanner, and a time selector combined with said divider to allow each of said counters to count during a determined time corresponding to the depth of the desired probing all the signals whose amplitude exceeds the actuation threshold of the associated said counter.

3,961,523

SCANNING ULTRASONIC INSPECTION METHOD AND APPARATUS

Alexander Rankin Cornforth, Stanion, England, assignor to British Steel Corporation, London, England

Filed June 17, 1974, Ser. No. 479,707

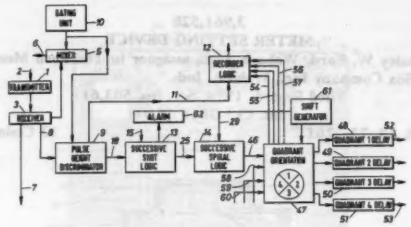
Claims priority, application United Kingdom, June 19, 1973, 29053/73

Int. Cl.² G01N *29/04*

U.S. Cl. 73—67.8 S **17 Claims**

10. A method of testing elongate articles for defects comprising scanning a defect detecting device in a helical path about the article; marking, upon receipt of defect indicative signals at the device, a pictorial record of the magnitude and position along the article of defects shown by the received defect indicative signals; subjecting received defect indicative signals, if they are greater than a predetermined magnitude, to

predetermined repetition test; and marking on the pictorial record the radial position about the article of defects shown



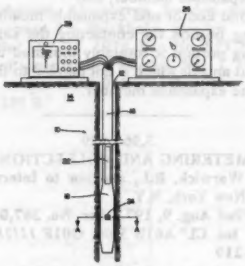
by the received defect indicative signals if they satisfy the predetermined repetition tests.

3,961,524

METHOD AND APPARATUS FOR DETERMINING ROCK STRESS IN SITU

Rodolfo V. de la Cruz, Madison, Wis., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed May 6, 1975, Ser. No. 574,992
Int. Cl.[2] E21B *49/00*
U.S. Cl. 73—88 E 14 Claims



1. In situ method of measuring the natural state of stress of rock at a preselected subterranean region in a borehole, comprising the steps of:

obtaining an initial strain reading of a test portion of the wall of said borehole at said pre-selected region, said initial strain created by the natural stress of the rock;

de-stressing said test wall portion by creating a fracture in the wall of said borehole;

obtaining a de-stressed strain reading of said test wall portion while maintaining open said fracture; and

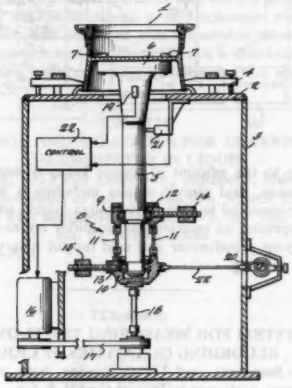
determining the natural state of stress of the rock from said initial strain and de-stressed strain readings.

3,961,525

METHOD OF AND DEVICE FOR TESTING THE FATIGUE STRENGTH OF ROTORS, ESPECIALLY DISC WHEELS, ESPECIALLY THOSE FOR MOTOR VEHICLES

Gunther Himmler, Darmstadt, Germany, assignor to Gebr. Hofmann KG, Darmstadt, Germany

Filed Sept. 13, 1974, Ser. No. 505,835
Claims priority, application Germany, Dec. 17, 1973, 2362559
Int. Cl.[2] G01N *3/32*
U.S. Cl. 73—91 11 Claims



1. A method of testing the fatigue strength of a stationary rotor comprising the steps of:

clamping the rotor on an exciter rod;

and

rotating rotary weights in parallel planes lying at different distances from said clamping point to apply equal and opposite transverse forces to said rod so as to reduce the net radial forces substantially to zero.

3. In an apparatus for testing the fatigue strength of a rotor having a clamping means for mounting the rotor, an exciter rod connected at one end to the rotor and the other end of which carries a rotatable exciter head by means of which transverse forces acting on the exciter rod can be produced, the improvement comprising rotary weights mounted 180° apart on said exciter head and rotating in planes which lie at different distances from the clamping surface of the rotor for producing the transverse forces acting on the exciter rod.

3,961,526

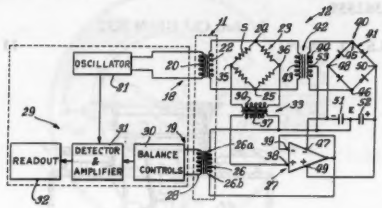
ROTARY TORQUEMETER

Sydney Himmelstein, Lake Forest, Ill., assignor to S. Himmelstein and Company, Elk Grove Village, Ill.

Continuation of Ser. No. 355,973, April 30, 1973, abandoned.
This application Dec. 30, 1974, Ser. No. 537,248
Int. Cl.[2] G01L *3/10*
U.S. Cl. 73—136 A 12 Claims

1. In a rotary torquemeter for indicating torque transmission in a rotary drive means, said torquemeter having an input rotary transformer defined by a stator primary winding and a secondary winding carried by said drive means, an output rotary transformer defined by primary winding carried by said drive means and a stator secondary winding, means for providing an input carrier signal to said input transformer, and means for receiving an output signal from said output transformer, an improved strain responsive means carried by said drive means for rotation therewith for acting on said input carrier signal to provide a variable output signal corresponding to the amount of torque being transmitted through said drive means, said strain responsive means comprising: foil

strain gauge means carried by said drive means; an amplifier carried by said drive means; and circuit means connecting said strain gauge means and amplifier between the secondary winding of said input rotary transformer and the primary winding of said output rotary transformer for providing to said receiving means a variable output signal accurately corresponding to the amount of torque being transmitted by the drive means, said circuit means including a step-up transformer connected to said strain gauge means and said amplifier comprising an operational amplifier connected between said step-up transformer and said output rotary transformer primary winding.



3,961,527

SYSTEM FOR MEASURING THE FLOW AND RECORDING QUANTITIES OF LIQUID

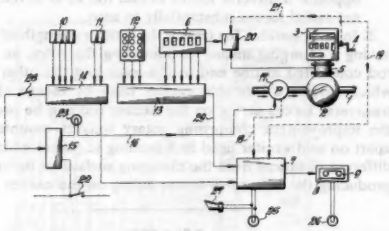
Joachim Sonnberg, and Ulrich Sanden, both of Hildesheim, Germany, assignors to Diessel GmbH & Co.

Continuation-in-part of Ser. No. 193,283, Oct. 28, 1971, abandoned. This application Mar. 18, 1974, Ser. No. 451,961

Claims priority, application Germany, Nov. 19, 1970, 2056854

Int. Cl.² G01F *1/00*

U.S. Cl. 73—194 R **12 Claims**



1. An apparatus for flow-metering and recording amounts of liquid, particularly milk, provided with a volumetric meter comprising:

a. a pulse generator (5) generating pulses which are a function of the flow rate;

b. an electronic counter (6) connected to said pulse generator and receiving said pulses which are a function of the flow rate;

c. a shift register (13) connected to the output of said electronic counter;

d. a control apparatus (7) connected to the output of said shift register;

e. a keyboard (12) for the input of given data entries connected to an input of said shift register;

f. at least one coding switch (10, 11) for the input of further given data entries connected to said control apparatus;

g. a magnetic tape unit (8) connected to the output of said control apparatus for storing the output values of said electronic counter, said data recorded by said magnetic tape unit for further processing in a data processing system; and

h. a blocking device (15) connected to said at least one coding switch actuating means for initiating flow metering after input and recording of said given data entries assigned to said at least one coding switch.

3,961,528

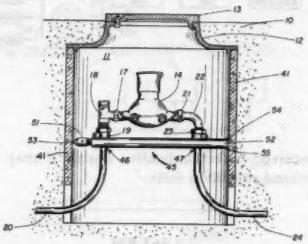
METER SETTING DEVICE

Stanley W. Ford, Wabash, Ind., assignor to The Ford Meter Box Company Inc., Wabash, Ind.

Filed Sept. 6, 1974, Ser. No. 503,617

Int. Cl.² G01F *15/18*

U.S. Cl. 73—201 **13 Claims**



1. The combination comprising:

a. a meter box having side walls and a top having a lid;

b. a meter within said meter box;

c. service pipes;

d. means connecting said service pipes to said meter;

e. an expansible member having a first end and a second end contacting opposite portions of the side walls of said meter box, said expansible member including means for forcing said first end and second end apart from each other and against opposite portions of the side walls;

f. means for maintaining the service pipes in a fixed relation to said expansible member; and

g. said second end of said expansible member including a contacting portion for contacting the side walls which contacting portion is rotatably mounted to permit rotation about an axis which is not parallel to the longitudinal axis of the expansible member.

3,961,529

URINE METERING AND COLLECTION SYSTEM

Paul Haniffl, Warwick, R.I., assignor to International Paper Company, New York, N.Y.

Filed Aug. 9, 1973, Ser. No. 387,011

Int. Cl.² A61B *5/00*; G01F *11/28*

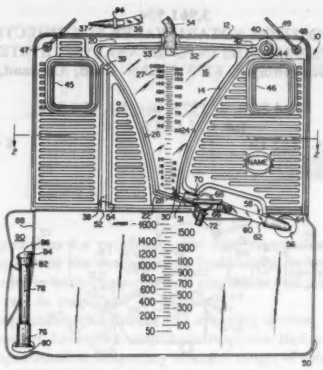
U.S. Cl. 73—219 **10 Claims**

1. A urine metering and collection system comprising:

a. a stiff head member including a closed volume calibrated chamber having a substantially flat front wall, a substantially flat rear wall, a top wall, and first and second sidewalls, a bottom wall sloping downwardly and forming an acute angle with said first sidewall, one of said walls having volumetric calibrations thereon, at least a section of said one of said walls having the calibrations thereon or adjacent thereto being transparent, the sidewalls continuously converging downwardly toward each other throughout at least a major portion of the length of said chamber such that each horizontal section of the chamber within said major portion has a smaller volume per unit of height than does the next adjacent upper horizontal section of the chamber, an outlet passageway at the bottom of said chamber through said first sidewall and in alignment with said bottom wall, an inlet passageway communicating with the chamber adjacent to the top of

the chamber, an overflow passageway having one end in fluid-flow communication with said chamber adjacent to the top thereof and an air vent in air-flow communication with said chamber;

b. an inlet tube attached at one end to said head member and in fluid-flow communication with said inlet passage-



way, the other end of said inlet tube being adapted for connection to a catheter; and

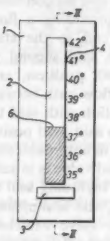
c. a collection bag fixedly secured to the head member below said chamber and having a first opening in fluid-flow communication with the other end of said overflow passageway, and a second opening in fluid-flow communication with said outlet passageway.

3,961,530

METHOD AND THERMOMETER FOR MEASURING TEMPERATURE BY DETERMINATION OF SATURATION OF A SOLVENT HAVING TEMPERATURE DEPENDENT CHARACTERISTICS

Claes Ivar Helgesson, Akersberga, Sweden, assignor to Arbman Development AB, Stockholm, Sweden

Filed Oct. 24, 1974, Ser. No. 517,750
Claims priority, application Sweden, Nov. 1, 1973, 7314906
Int. Cl.² G01K *11/12, 3/00*
U.S. Cl. 73—339 R **13 Claims**



1. A method for determining a temperature within a predetermined temperature range comprising contacting a solute in columnar form with a solvent therefor at one end thereof while being subjected to the temperature to be determined, said solvent being unsaturated with solute at the temperature within said predetermined temperature range and the amount of said solute soluble in said solvent varying in accordance with the temperature thereof, and determining the amount of solute progressively dissolved in said solvent when saturated with solute after contacting the solute with said solvent, to determine the temperature thereof.

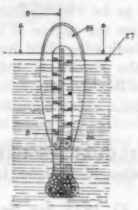
5. A thermometer for measuring temperature within a predetermined temperature range comprising a columnar means containing a soluble substance, frangible means containing a specified quantity of a solvent for said soluble substance and disposed at one end of said columnar means, said frangible means normally separating said soluble substance from said solvent, and a temperature scale associated with said columnar means, said solvent and soluble substance having solubility characteristics which change with temperature and said solvent being unsaturated with the soluble substance at temperatures within said predetermined temperature range whereby when said frangible means is broken said solvent progressively dissolves the soluble substance in said columnar means until the solvent becomes saturated with the soluble substance and the extent to which said soluble substance is dissolved indicating the existing temperature on said temperature scale.

3,961,531

METHOD AND APPARATUS FOR ADHERING THERMOMETER IN LIQUID

Ting-Fu Peng, 6313 Fair Oaks Ave., Baltimore, Md. 21214

Continuation-in-part of Ser. No. 344,076, March 23, 1973, abandoned. This application Jan. 6, 1975, Ser. No. 539,004
Int. Cl.² G01K *13/00*
U.S. Cl. 73—353 **1 Claim**



1. A method for adhering a floating thermometer casing to the wall of liquid container including the steps of providing a flat surface on said casing which is to hold the thermometer, placing the thermometer and casing in the liquid of said container and arranging said flat surface to be next to said wall of said container, and allowing surface tension of said liquid to adhere said casing to said liquid container thereby preventing the thermometer and casing from rotating.

3,961,532

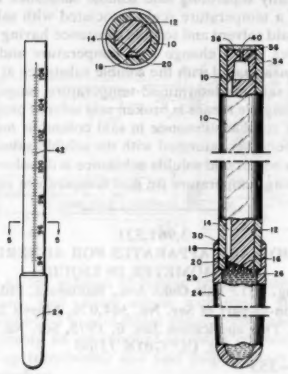
DISPOSABLE CLINICAL THERMOMETER

Raymond Kukuruzinski, 88 Clinton Place, Hackensack, N.J. 07601

Continuation-in-part of Ser. No. 563,789, March 31, 1975, abandoned. This application Oct. 29, 1975, Ser. No. 626,762
Int. Cl.² G01K *5/10, 5/22*
U.S. Cl. 73—371 **12 Claims**

1. A disposable clinical thermometer for one-time use, said thermometer including: (a) a rod-like member of regular cross section and at least partially translucent and said rod having a longitudinal groove of regular cross section along its outer surface; (b) a baffle provided at one end of the rod, said baffle substantially closing the end of the groove to provide a constriction while not completely closing the groove; (c) an outer tubular housing of relatively transparent material, this outer housing being a tight fit on the rod and in mounted condition terminating near the baffle end of the rod while extending beyond the other end of the rod; (d) a rigid fluid container sealingly attached to the outer tubular housing at the end adjacent the baffle end of the rod; (e) a closing member secured to the other end of the tubular outer housing to seal this end while providing an expansion chamber connected to the longitudinal groove by which air and the like in the groove

may flow from the groove as the groove is filled by fluid; (f) an indicating fluid having a determined coefficient of expansion when heated, said fluid as it expands flowing past the constriction and up the groove an amount commensurate to the amount of heat applied to the fluid container, and (g)



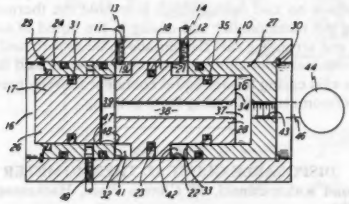
indicia applied so as to be viewed from the outside of the thermometer to indicate the degree of heat induced into the fluid container, the indicating fluid having and leaving an indicating color in the groove to indicate the maximum amount of the upward fluid travel.

3,961,533

DIFFERENTIAL FLUID-PRESSURE TRANSDUCER

Milton C. Bennett, Moline, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed Apr. 22, 1975, Ser. No. 571,011
Int. Cl.² G01L 7/16
U.S. Cl. 73—419 **8 Claims**



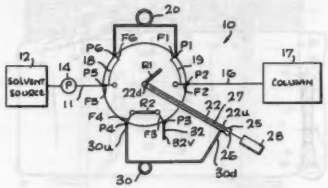
1. A differential fluid-pressure transducer, comprising a housing having two spaced-apart fluid inlet openings and a fluid outlet opening, a member movably disposed in said housing intermediate said inlet openings and fluid-tightly separating said inlet openings from each other, said member having thereon two areas of one size respectively and independently exposed to said inlet openings, a portion of said member and said housing together defining a compartment and said member being movable relative to said compartment in response to fluid pressure at said two areas, the area of said portion also being of said one size, a fluid passageway extending between said compartment and one of said two areas for fluid flow communication therebetween, said housing having a drain port, said member and said housing having a clearance therebetween and thereby form a variable fluid leakage path in flow communication with said compartment and said one of the said two areas and said drainport, and having said clearance arranged with a variable magnitude to alter fluid volume in accordance with the position of said member relative to said compartment while maintaining full fluid pressure exposed to said one area and when said member is moved in the direction away from said compartment, and said housing fluid outlet being in fluid-flow communication with said compartment for receiving the pressure of the fluid in said compartment in accordance with fluid pressure at said two areas.

3,961,534

TWO POSITION ROTARY VALVE FOR INJECTING SAMPLE LIQUIDS INTO AN ANALYSIS SYSTEM

Richard Gundelfinger, 6273 Chabot Road, Oakland, Calif. 94618

Filed Sept. 2, 1975, Ser. No. 609,394
Int. Cl.² G01N 1/10
U.S. Cl. 73—422 GC **8 Claims**



1. For use in combination with a source of liquid from which liquid flows at a selected pressure greater than atmospheric pressure to a liquid receiver, a rotary valve, positionable in either a first position, definable as a load position, or a second position, definable as in inject position, for injecting a liquid sample into the liquid stream from said source to said receiver, the valve comprising:

a stator including a plurality of external ports and a corresponding plurality of internal liquid flow paths in communication with said ports, said ports including first and second ports connectable to said source and receiver, respectively, a third port vented to atmospheric pressure, and a fourth port;

an external conduit defining a fixed length sample loop having an upstream end connected to said fourth port and a downstream end;

rotable rotor means defining a needle cavity connected to the sample loop downstream end, and defining an upstream end and a downstream end, said rotor means further defining first and second rotor flow passages, said first rotor passage providing a flow path between the cavity downstream end to the stator internal path in communication with said second port only when said valve is in said inject position, and said second rotor passage providing a flow path between the stator internal paths in communication with said third and fourth ports when said valve is in said load position, and between the stator internal paths in communication with said first and fourth ports when said valve is in said inject position, said rotor means further including seal means for sealing the cavity upstream end, said seal means defining an opening accessible from the valve exterior for facilitating the insertion of a syringe needle into said cavity therethrough for injecting a liquid sample into said sample loop through said cavity; and

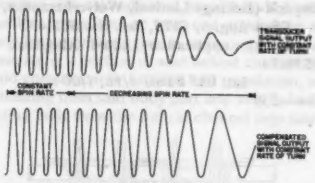
plug means for effectively closing the opening of said seal means, said seal means with said plug means being adapted to withstand said selected pressure when liquid flows through said cavity at said selected pressure when said valve is in said inject position, said plug means comprising an elongated wire having a front portion thereof insertable into said cavity through the seal means opening to thereby close the latter, and a lockable plug holder connected to the wire end opposite the front portion which is insertable into said cavity.

3,961,535

SPIN RATE COMPENSATOR

Daniel Blitz, Boston, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Feb. 10, 1975, Ser. No. 548,306
Int. Cl.² G01C 21/12; G01P 15/08
U.S. Cl. 73—505 8 Claims



1. Apparatus for providing spin rate compensation for a spinning device the output signal from which is proportional to spin rate in both frequency and amplitude and proportional to turn rate in amplitude, comprising:

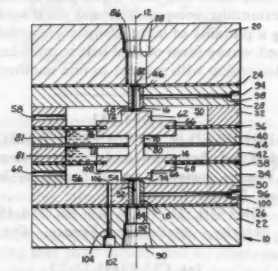
a compensator coupled to the spinning device, said compensator having an amplitude response that is inversely proportional to frequency over the range of spin frequencies of interest.

3,961,536

FLUIDIC ACCELEROMETER

Carl Gustave Ringwall, Scotia, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Nov. 15, 1974, Ser. No. 524,195
Int. Cl.² G01P 15/02
U.S. Cl. 73—515 9 Claims



1. A fluidic accelerometer having a sensitive axis, comprising:

a. a seismic mass having first and second end surfaces positioned perpendicular to said sensitive axis;

b. viscous damping means, mechanically coupled to and suspending said seismic mass in a normal null position, for damping oscillatory movement of said seismic mass in the direction of said sensitive axis;

c. means responsive to movement of said seismic mass in the direction of said sensitive axis for providing a restoring force to return said seismic mass to the normal null position and for producing an output fluidic signal variation proportional to the acceleration of said seismic mass in the direction of said sensitive axis; and

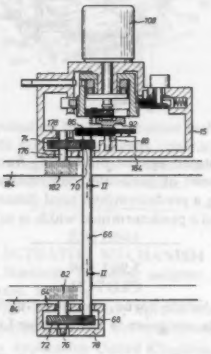
d. means for applying a fluidic signal to said seismic mass perpendicular to one of said first and second end surfaces for counteracting the force of gravity on said fluidic accelerometer.

3,961,537

FEED DRIVE FOR THE BED SLIDE OF A MACHINE TOOL

Hans Günther Rohs, Rechberghausen, Germany, assignor to Gebruder Boehringer GmbH, Germany

Filed Nov. 12, 1974, Ser. No. 523,027
Claims priority, application Germany, Nov. 19, 1973, 2357659
Int. Cl.² F16H 19/04
U.S. Cl. 74—29 4 Claims



1. In a machine tool a bed provided with a straight guideway, a bed-slide movable thereon, a pair of spaced, parallel racks provided on said guide-way in fixed relationship thereto, a pair of spaced pinions each engaging one of said racks and being rotatably mounted on said bed-slide, a feed motor on said bed-slide, and means for gearing said pinions to said motor, including

a differential transmission having an input connected with said motor and having two outputs,

said outputs comprising a first pair of helical gears drivingly connected with said pinions, each of said helical gears having a hand opposite to that of the other helical gear of the pair thereof, and

means mounting said first pair of helical gears so that they equalize the torques transmitted thereby from said motor to said pinions by affording relative rotation of said pinions.

3,961,538

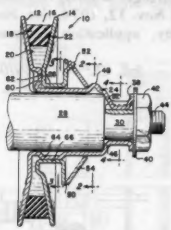
EXPANSIBLE SHEET METAL PULLEY WITH MANNUAL DETENT ADJUSTMENT MEANS

Ronald L. Phillips, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 23, 1974, Ser. No. 508,537
Int. Cl.² F16H 55/52, 55/54
U.S. Cl. 74—230.8 3 Claims

1. An adjustable pulley of the split sheave type of sheet metal construction wherein a movable sheave half is adjustably positioned relative to a fixed sheave half providing a variable width belt groove therebetween, the adjustable pulley comprising in combination; a fixed sheave half, a first hub fixed to said fixed sheave half, a shaft, said first hub positioned on said shaft, means drivingly connecting said first hub to said shaft, a movable sheave half, a second hub secured to said movable sheave half, said movable sheave half mounted for axial reciprocating movement relative to said fixed sheave half, means drivingly connecting said fixed and movable sheave halves for rotation in unison as a pulley assembly, spring means mounted on said first hub engaging said second hub continuously biasing said movable sheave half toward said fixed sheave half while maintaining the sheave halves assembled, cam means in the form of deformations having varying

heights on one of said sheave halves, and cam seats in the form of deformations on the other of said sheave halves, said cam means selectively engaging said cam seats when said movable



sheave half is rotated against the biasing force of said spring means, engagement of particular cam means with said cam seats establishing a predetermined axial distance between said sheave halves and a predetermined width in said belt groove.

3,961,539

CLUTCH

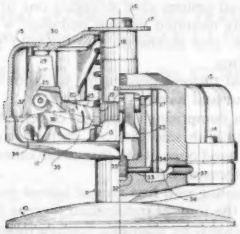
Alain Tremblay, Sainte-Barbe, and Jean-Guy Talbot, Valcourt, both of Canada, assignors to Bombardier Limited, Valcourt, Canada

Filed Apr. 11, 1975, Ser. No. 567,110

Claims priority, application Canada, May 23, 1974, 200653

Int. Cl.² F16H *55/52*

U.S. Cl. 74—230.17 E **3 Claims**



1. In a rotary clutch comprising a fixed pulley flange adapted to rotate with a clutch shaft, and a movable pulley flange adapted to slide axially towards and away from said fixed flange to vary the drive ratio of an endless belt driven between said flanges, said movable flange being resiliently urged axially away from said fixed flange; centrifugally actuated means operable at a predetermined speed of rotation to overcome said resilient means and displace the movable flange axially towards the fixed flange with a force which increases with the speed of rotation, said centrifugally actuated means comprsing a plurality of flyweights spaced at uniform angular intervals about the axis of the shaft and pivotally mounted on a part associated with the movable flange, each said flyweight being adapted to co-operate with a follower means on a corresponding radial limb of a spider which is fixed in relation to said shaft; means constraining said movable flange to rotate with said fixed flange; said flyweight and spider being enclosed within a housing detachably secured to the rear side of said movable flange;

The improvement comprising:

each flyweight being mounted on a pivot shaft received in aligned through bores in a pair of spaced lugs close to the periphery of said movable flange, and said housing including for each flyweight a pair of projecting bodies which straddle said lugs and form a pair of closely spaced abutments adjacent respective ends of said pivot shaft, thus preventing disassembly thereof when the housing is attached to the movable flange, said pivot shaft being readily removable upon detachment of the housing.

3,961,540

CONVEYOR BELTS

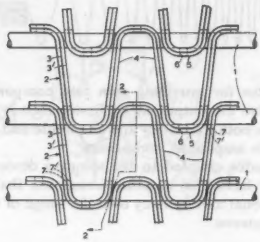
George Arthur Harvey, Blakedown, England, assignor to U.M.-E.C.-Boydell (Belting) Limited, Wolverhampton, England

Filed Aug. 6, 1975, Ser. No. 602,432

Claims priority, application United Kingdom, Aug. 13, 1974, 35538/74

Int. Cl.² F16G *1/18, 1/00*

U.S. Cl. 74—239 **5 Claims**



1. A honeycomb conveyor belt comprising a series of parallel transverse rods and a plurality of open-work belt sections which extend between and are pivoted to said transverse rod, said belt sections being of cranked or wavey form having a series of longitudinally extending components spaced apart transversely of the conveyor belt joined at their ends by transversely extending cross components, adjacent belt sections longituidnally of the conveyor belt intermeshing with one another at said transverse rods which pass through said longitudinally extending components, and each said belt section comprising a plurality of metal strips correspondingly bent to said cranked wavey form of said belt section and disposed in nesting relationship with respect to one another.

3,961,541

BALL-EQUIPPED SCREW AND NUT MECHANISM

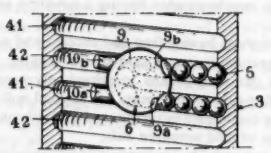
Jean Claude Fund, Bourdeau, and Jacques Detraz, Chambery, both of France, assignors to La Technique Integrale S.A., Chambery, France

Filed Oct. 21, 1974, Ser. No. 516,497

Claims priority, application France, Oct. 30, 1973, 73.38615

Int. Cl.² F16H *55/22*

U.S. Cl. 74—459 **8 Claims**



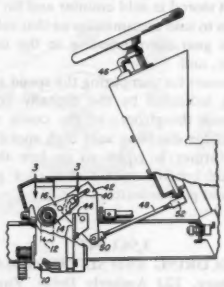
1. In a ball-equipped screw and nut mechanism including a plurality of spherical balls and mating nut and screw members, wherein rotary motion of one of said members relative to the other causes axial motion of the other, the nut having an outer surface and helical groove in its inner surface, the screw having a complemental groove in its outer surface, said grooves cooperating to define a helical channel of substantially circular cross-section in which said balls circulate, the improve-

ment in combination therewith wherein said nut includes a hole extending generally radially outward from its inside surface to its outer surface, a transfer component comprising a body part which is cylindrical and conforms to and is positioned in said hole in the nut, said body part having length in the axial direction of the screw corresponding to one pitch length between two adjacent grooves of said helical channel and defines therein a transfer passage extending between and communicating with said adjacent grooves, said transfer component further comprising at least one appendage extending transversely from said body part in a circumferential direction into and engaging a portion of said helical channel for immobilizing said component in rotation and translation, and guide means extending from said body part into said helical channel for deflecting balls from the helical channel into said transfer passage.

3,961,542
CONTROL LINKAGE FOR HYDROSTATIC TRANSMISSION

David A. Fulghum, La Grange, and John R. Badini, Villa Park, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 10, 1975, Ser. No. 540,199
Int. Cl.² F16D *3/76*
U.S. Cl. 74—470 **8 Claims**



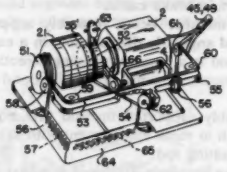
1. In a vehicle hydrostatic transmission system, a swash plate, trunnion shaft means fixed to and extending from said swash plate for rotational mounting of said swash plate, said shaft means having a limit pin fixed to and projecting laterally therefrom, a movably mounted control arm having a pair of spaced abutments for receiving said limit pin therebetween for force transmission engagement therewith and having an aperture for receiving said shaft means, and an elastomeric bushing bonded to and engaged between said arm and said shaft means for selective transmission of torque therebetween, said bushing being elastically deformable to a predetermined degree prior to transmission of torque beyond which deformation said limit pin engages said abutment and said bushing transmits torque.

3,961,543
ELECTRIC ADJUSTING MEANS FOR AZIMUTH AND ELEVATION ADJUSTMENT

David M. Morgenstern, deceased, late of Shaker Heights, Ohio; by Stanley Morgenstern, executor, Shaker Heights, Ohio; Harold M. Chattman, executor, and Allan R. Cole, executor, both of Cleveland, Ohio, assignors to Tenna Corporation, Cleveland, Ohio

Division of Ser. No. 185,250, Sept. 30, 1971, Pat. No. 3,857,631. This application Dec. 26, 1973, Ser. No. 427,640
Int. Cl.² G02B *5/08*
U.S. Cl. 74—501 M **13 Claims**

1. An adjusting device for effecting limited universal adjustment of a part to be adjusted comprising; a first supporting member; a second supporting member spaced from the first member; universal joint means connecting said members effecting limited universal movement therebetween; and actu-

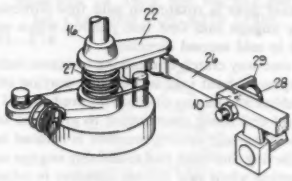


ating means disposed on the first member including tensioned elongated flexible connecting means coacting with said second member to effect universal movement of such second member with respect to the first member.

3,961,544
ACTUATOR MECHANISM

Ronald Phillips, Northolt, England, assignor to C.A.V. Limited, Birmingham, England

Continuation of Ser. No. 457,701, April 4, 1974, abandoned. This application Apr. 12, 1974, Ser. No. 460,530
Claims priority, application United Kingdom, Apr. 14, 1973, 18095/73
Int. Cl.² G05G *1/14*
U.S. Cl. 74—513 **6 Claims**



1. An actuator mechanism for the fuel quantity control member of a fuel injection pump and comprising an electromagnetic device including an angularly movable drive shaft, an ouput member in the form of an arm mounted for angular movement relative to said shaft, means coupling said arm to said control member, further means coupling said arm to said shaft for moving the control member to increase the amount of fuel supplied by the pump, resilient means acting on the shaft for opposing movement of the shaft in the direction to increase the amount of fuel, a yieldable connection included in said further means whereby the control member may be moved towards a predetermined position irrespective of the setting of the shaft by the application of external force.

3,961,545
PARKING BRAKE CONTROL

Randall P. Petresh, Northville, and Raymond F. Toohey, Lincoln Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed July 1, 1974, Ser. No. 484,895
Int. Cl.² G05G *1/04*
U.S. Cl. 74—517 **4 Claims**

1. A multi-stroke parking brake control for a motor vehicle comprising a housing and an actuating rod slidably supported in said housing,

said actuating rod being linearly displaceable between an at rest position and a cable tensioning position,

said actuating rod having a handle constructed to be manipulated by a motor vehicle operator,

said actuating rod having a toothed rack formed along a portion of its length,

a driving member having a pulley portion constructed to be connected to a brake cable,

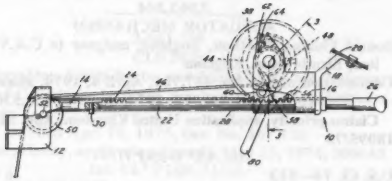
said driving member being rotatably supported on said housing and angularly displaceable in a cable tensioning direction and in a tension relieving direction,

said driving member having first and second drum-like hub portions,

a gear rotatably supported on said first hub portion and having teeth in mesh engagement with said toothed rack of said actuating rod,

said gear being angularly displaced in a first direction when said actuating member is displaced from said at rest position to said cable tensioning position,

a first one-way clutch comprising a first helical spring coil disposed about said first hub portion and having one end secured to said gear,



said first coil being constructed to grip said first hub portion when said gear is rotated in said first direction and to slidably engage said first hub portion when said gear is rotated in said second direction,

a second one-way clutch comprising a second helical spring coil disposed about said second hub portion of said driving member and having one end secured to said housing,

said second coil being constructed to grip said second hub portion when said driving member is rotated in said tension relieving direction and to slidably engage said second hub portion when said driving member is rotated in said cable tensioning direction,

said gear being angularly displaceable in a second direction when said actuating member is displaced from said cable tensioning position to said at rest position,

said second coil having a second free end,

a release lever having a portion constructed to engage said free end of said second coil and to displace said second coil whereby said second hub portion slidably engages said second coil when said second hub portion is angularly displaced in said tension relieving direction.

3,961,546

DIGITAL AUTOMATIC TRANSMISSION CONTROL

Thomas P. Gilmore, Wauwatosa, and David L. Moore, Brookfield, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sept. 17, 1974, Ser. No. 506,793
Int. Cl.² B60K *21/00*
U.S. Cl. 74—866 **37 Claims**

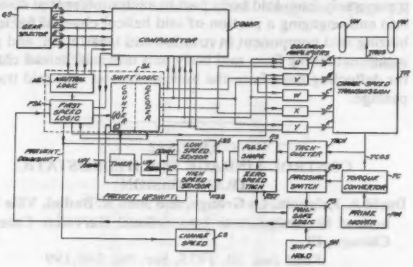
1. In combination with a gear selector which provides digitally coded electrical signals representative of desired speed and a change-speed transmission which engages selected gears to provide different speed ratio power paths between input and output shafts in accordance with digitally encoded electrical signals applied to inputs thereof, a digital control for automatically shifting said transmission comprising

tachometer means for generating pulses at a frequency which is a function of the angular velocity of said transmission input shaft,

an up-down counter,

high speed sensor means and low speed sensor means operable respectively when the frequency of said tachometer pulses is above a first predetermined rate and below a second predetermined rate,

means responsive to the operation of said high speed sensor means and to the operation of said low speed means sensor respectively for incrementing and decrementing said counter,



means for generating digitally coded signals representative of the count stored in said counter and for applying them to the inputs to said transmission so that said transmission engages the gear corresponding to the count stored in said counter, and

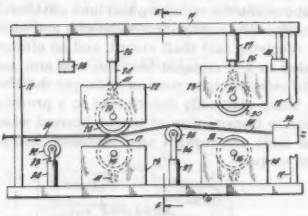
comparator means for comparing the speed set on said gear selector, as indicated by the digitally coded electrical output signals therefrom, to the count stored in said counter and for disabling said high speed sensor means when the former is equal to or less than the latter, whereby said control cannot shift to a gear above the setting of said gear selector.

3,961,547

PAPER SCORING AND SLITTING MACHINE

Maurice Shainberg, 22J Amberly Drive, Englishtown, N.J. 07726, and Joseph Purcell, 49 Kaurik St., Little Ferry, N.J. 07643

Filed Nov. 20, 1974, Ser. No. 525,350
Int. Cl.² B26D *3/08*
U.S. Cl. 83—11 **1 Claim**



1. A scoring and slitting machine for a moving web including a first set of upper and lower rotary knives and scoring wheels for scoring and slitting the web; a second set of upper and lower rotary knives and scoring wheels, spaced from the first set for alternate operation on the web for producing an alternate pattern of slits and score marks; the improvement comprising:

a. supporting cross shafts for rotatably mounting each of the sets of slitting knives and scoring wheels;

b. a threaded cross shaft in parallel alignment with each of the supporting cross shafts;

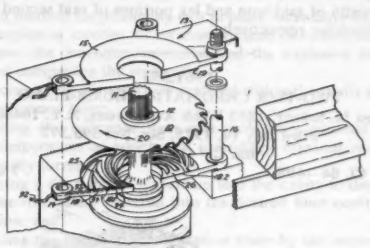
c. a plurality of split nuts coupled to the knives and scoring wheels for selectively engaging the threads on said threaded cross shaft for moving the knives and scoring wheels transversely to predetermined positions when the threaded shaft is rotated and for anchoring the knives and scoring wheels when the threaded shaft is not rotating;
d. means on each of the split nuts for engaging and disengaging the nuts from the threaded shafts;
e. circuit means including a source of potential, for selectively operating the split nut engaging means during a pattern changing operation;
f. and means comprising a manually operable selector switch to energize either a first or second relay winding to raise one of the cross shafts and lower the other cross shaft while the web is moving.

3,961,548

GUIDE APPARATUS FOR ROTARY SAWS HAVING FLOATING CIRCULAR SAW BLADES

Lutz Claassen, Delta, Canada, assignor to Hawker Siddeley Canada Ltd., Toronto, Canada

Filed Mar. 27, 1974, Ser. No. 455,411
Claims priority, application United Kingdom, Apr. 3, 1973, 15853/73
Int. Cl.² B27B *5/29*; B23D *59/02*
U.S. Cl. 83—169 **11 Claims**



1. Guide apparatus for a rotary saw having a circular saw blade freely movable longitudinally of an arbor, the guide apparatus comprising:
a. a pair of substantially circular guide plates having a segment removed therefrom adapted to be disposed on opposite sides of, and spaced from the saw blade, said plates having curved inner and outer peripheral edges clear of the arbor and saw teeth, respectively, and substantially radially extending leading and trailing edges, relative to direction of rotation of the saw blade, and having guide faces extending parallel to the saw blade,
b. the guide plates having a plurality of spiral grooves extending across the guide faces, the grooves having leading ends, relative to direction of rotation of the saw blade, opening out of at least one edge of each of the guide plates so that rotation of the saw blade induces a flow of air into the grooves,
c. the grooves being effectively closed at trailing ends so as to develop air cushions between the saw blade and the guide plates.

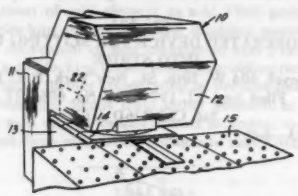
3,961,549

DIE CHANGING TURRET TABLE SEGMENT

Franklin A. Smith, Clarence, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed June 16, 1975, Ser. No. 587,392
Int. Cl.² B26D *7/00*
U.S. Cl. 83—552 **11 Claims**

1. In a machine tool having an annular turret with a periphery substantially closed by a worktable having outer edges spaced from the periphery of the turret, the worktable having a segment thereof extending from the periphery of the turret to the outer edge of the worktable removable from the remainder of the worktable to provide access to the periphery of the turret below a common worktable top level, the improvement of said segment being connected to said matching through a plurality of connection means, said segment mov-



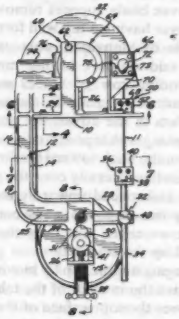
able between first and second position, said first position being a work position with a top of the segment planer with the top of the remainder of the worktable, said second position being a turret access position with said top of said segment being spaced below the remainder of said worktable, the said connection means limiting movement of the said segment except between said positions.

3,961,550

BAND SAW

Everett O. Oliver, 15504 E. Hornell, Whittier, Calif. 90604, and John T. Millwee, 18231 Sharon Lane, Villa Park, Calif. 92667

Filed Feb. 24, 1975, Ser. No. 552,300
Int. Cl.² B26D *5/08*; B27B *13/00*
U.S. Cl. 83—574 **14 Claims**



1. In a band saw having a frame supporting distal blade wheels including driven and idler blade wheels pivotally mounted thereon, a band saw blade extending between and about said blade wheels, prime mover means coupled in driving relationship to said driven blade wheel, the improved mounting means for the idler blade wheel which comprises:
distal channel means open at one end of said frame;
elongated slot means transverse to said channel means, also open at said distal end of said frame;
slide means in the form of an elongated plate having a tapered inner end and bearing, at its opposite end, threaded shaft means;
boss means on said elongated plate for tracking in said elongated slot and bearing a central bore receiving a blade wheel support shaft projecting therefrom for journalled support of said idler saw wheel;
tension adjustment means comprising a hand wheel threaded on said threaded shaft means and resilient

means biased between said hand wheel and said frame whereby the tension load on said saw blade can be fixedly adjusted; and

tilt adjustment means comprising screw means threadably carried by said frame and projecting into said channel and bearing the tapered end of said slide means whereby the tilt of said idler blade wheel can be fixedly adjusted.

3,961,551

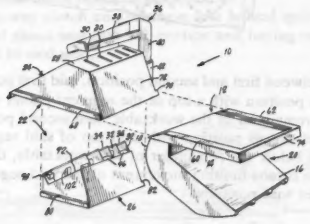
HAND-OPERATED DEVICE FOR SLITTING FABRIC INTO STRIPS

John S. Doyel, 404 W. 20th. St., New York, N.Y. 10011

Filed Aug. 22, 1975, Ser. No. 606,777

Int. Cl.² B26D *3/12*

U.S. Cl. 83—648 6 Claims



1. A hand-operated device for slitting fabric drawn therethrough into springs comprising:

a bracket formed of a top leg and a bottom leg joined at their back end and extending divergently forwardly therefrom to form therebetween a generally V-shaped notch;

a blade unit secured to the bracket, said blade unit comprising a generally convex, hollow blade support cover and a generally convex blade support removably nesting in the cover, said cover having a top wall formed with a laterally extending row of elongated slots each extending forwardly, and said support having means for holding a laterally extending row of blades each extending forwardly and protruding upwardly through a corresponding one of said slots in the cover, the protruding portion of each blade having a sharpened edge sloping upwardly in extending from the back toward the front of the bracket;

a guard bar extending laterally over the protruding portions of the blades and spaced upwardly therefrom; and

a wedge having two opposite walls converging towards a sharp end at an angle matching that of the V-shaped notch formed by the bracket;

said device engaging a table top by moving the bracket from the edge toward the interior of the table top, with the top bracket leg over the top surface of the table top and with the bottom leg under the underside of the table top, and pressing the inner side of one leg flat against the table top by inserting the sharp end of the wedge between the other leg and the table top and forcing the wedge toward the back of the bracket, said device slitting fabric into strips by drawing the fabric forwardly between the top surface of the blade support cover and the facing surface of the guard bar while pressing the fabric downwardly over the sharpened edges of the blades.

3,961,552

MEANS FOR CUTTING SQUARES

Walter B. Graham, 1010 S. 91st St., Omaha, Nebr. 68114

Filed May 30, 1975, Ser. No. 582,122

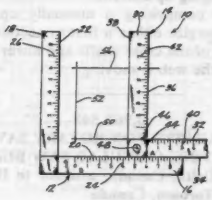
Int. Cl.² B26D *7/00*

U.S. Cl. 83—821 1 Claim

1. A device for cutting squares, comprising,

a first flat guide member comprising an elongated base portion and an elongated leg portion extending from one end of said base portion at a right angle thereto, said base and leg portions having inner guide edges formed thereon,

and a second flat guide member comprising an elongated base portion and an elongated leg portion extending from one end of said base portion at a right angle thereto, said base and leg portions having outer guide edges complimentary to the inner guide edges on said first guide member, said base and leg portions of said second guide member having inner guide edges provided thereon,



said base and leg portions of each of said first and second guide members having scales provided thereon,

said scales on said base and leg portions of said first guide member having their 0 indices spaced a predetermined distance from the inner guide edges of said leg and base portions respectively, said spacing corresponding to the width of said base and leg portions of said second guide member respectively.

3,961,553

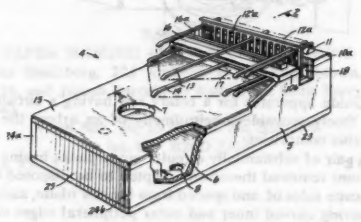
TWO-TIER CHROMATIC THUMB PIANO

Steven M. Schorr, 2853 Webb Ave., Bronx, N.Y. 10468

Filed July 14, 1975, Ser. No. 595,377

Int. Cl.² G10D *13/08*

U.S. Cl. 84—408 7 Claims

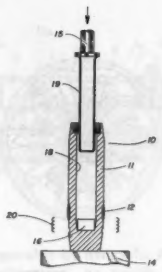


1. A multi-tier chromatic thumb piano comprising in combination: an elongated enclosure vessel means defining an elongated space within, and defining at one end thereof an upper-face stepped support structure including a higher tier in juxtaposition to said one end and a lower tier adjacent thereto located toward a remaining spaced-away other end thereof, and defining a through-aperture within an upper face of the vessel means such that said elongated space is in communication with exterior space; two sets of elongated semi-flexible finger members of varying lengths from one-another ranging from predetermined short length to predetermined long length in steps of length predetermined to equal tone variations, one set having lengths of the finger members adapted as to obtain tones of substantially half-way intermediate tones relative to a second sets finger members, the one set being mounted to extend substantially horizontally above an upper face of the elongated enclosure vessel means from the higher tier, and the second set being mounted to extend substantially horizontally above the upper face from the lower tier, distal ends of finger members of the one set and of the second set respectively extending substantially toward said remaining spaced-away other end.

3,961,554
METHOD FOR MAKING INCENDIARY LINES FOR ORDNANCE

Darrel W. Harris, Colonial Beach; Robert A. Green, McLean, and Donald M. Grigsby, Rollins Fork, all of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 8, 1974, Ser. No. 459,131
Int. Cl.² F42B *33/00*
U.S. Cl. 86—1 R **3 Claims**



1. A method for producing cast in place incendiary liners in the explosive cavities of ordnance items wherein contact between the incendiary material and the explosive is precluded comprising the steps of:

placing a slug of incendiary material within the cavity of the ordnance item;

heating the ordnance item and incendiary material to a temperature at which the incendiary material may be easily formed;

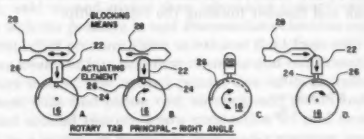
forcing a deep drawn metal cup into the cavity to displace the incendiary material into the desired liner configuration; and

cooling the resulting configuration whereby the incendiary liner is mechanically and metallurgically bonded to both the ordnance item and said metal cup and the recess within said metal cup defines a cavity for the explosive load with intimate contact between the explosive load and said liner being prevented.

3,961,555
SAFETY MECHANISM FOR INTERVALOMETERS AND DISTRIBUTORS

Wayne G. Zellmer, and Marvin E. McGowan, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 13, 1975, Ser. No. 540,479
Int. Cl.² F41F *3/04*; F42C *15/06*
U.S. Cl. 89—1.812 **5 Claims**



1. In a firing device for ordnance or the like the combination comprising:

an electrically operable actuating element movable between a normal SAFE position and a FIRE position for firing said ordnance;

energy storage means biasing said element to said SAFE position;

energy output means effectively connected to said element for moving said element to said FIRE position;

blocking means associated with said element and relatively movable from a position disabling full movement of said element to a position enabling full movement of said element;

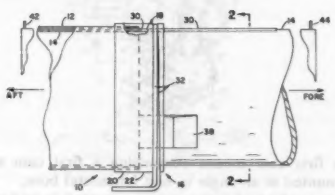
said blocking means and said element including complementary cooperating surfaces which coact to prevent movement of said element to said FIRE position when said blocking means is in said disabling position and to allow movement of said element to said FIRE position when said blocking means is in said enabling position; and

said surfaces further cooperating to prevent movement of said blocking means from either position to the other when said energy output means is acting to urge said element from said SAFE position to said FIRE position.

3,961,556
ROCKET LAUNCHER TELESCOPING TUBE LOCKING MECHANISM

Glen A. Clodfelter, Madison, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 3, 1974, Ser. No. 511,829
Int. Cl.² F41F *3/04*
U.S. Cl. 89—1.816 **3 Claims**



1. A lightweight man-transportable rocket launcher comprising:

a. inner and outer tubular sections connected to telescope between a shortened, inoperative position and an extended operative position;

b. a first sight mounted on said outer tubular member, and, a second sight mounted on said inner tubular member; and

c. a locking mechanism carried by said tubular sections for cooperation therebetween for securing said sections in said extended position, said locking mechanism including a retainer ring secured to the forward end of the outer tubular section and a locking plate secured to said inner tubular section, said retainer ring having an outer cylindrical portion provided with a groove therein, a lock spring disposed in said groove, said groove being provided with openings therethrough whereby during displacement of said tubes to said extended position said lock spring extends through said openings in said groove to engage said locking plate.

3,961,557
QUICK-LOCKING MACHINE STOP

Randolph M. Jezowski, Lynn, Mass., assignor to Signet Tool and Engineering, Inc., Saugus, Mass.

Filed June 16, 1975, Ser. No. 587,252
Int. Cl.² B23Q *3/18*
U.S. Cl. 90—11 E **6 Claims**

5. In a work stop of the type used on machine tools to limit the movement of a workpiece during the machining thereof and wherein said work stop comprises a housing means for positioning the height and angular position of said housing on a post; and wherein said housing carries a clamp means adapted to hold a work stop member, the improvement

wherein said housing comprises a lock actuating means including

A. a first vertical bore in said housing forming means to receive said post;

B. a horizontal bore and second vertical bore together forming means to contain a clamp-actuating mechanism;

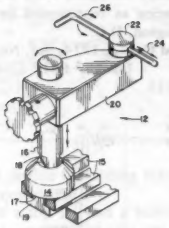
C. said horizontal bore in said housing forming means to house a horizontally aligned lockactuating means, said horizontal bore partially intersecting with said first vertical bore so that a portion of a cylinder formed by said first vertical bore passes through a segment of the space formed by said vertical bore;

D. said second vertical bore intersecting said horizontal bore and forming means to house a vertically aligned means for locking said clamp means, and wherein

E. said horizontally aligned actuating means comprises

1. an actuating screw

2. a post clamp member through which said screw passes and which comprises a segmental cutout for receiving that portion of said post which is placed in said segment



3. a first cam means comprising a first cam surface mounted at an angle to said horizontal bore;

4. a second angular cam measn mounted in said vertical bore and connected to vertical clamp-actuating means mounted in said bore, said second cam forming with said first cam, means to convert horizontal force vector exerted on said first cam means to a vertical force vector on said vertically-aligned locking means

F. lock-actuating means comprising screw means to pull said post clamp member into locking contact with said post and, simultaneously, force said first cam against said second cam and thereby lock said clamp means and said work stop member,

G. and a biasing means positioned in said clamp-actuating mechanism, said biasing means adapted to maintain sufficient pressure on said clamp post to avoid spurious movement of said post clamp movement relative to said post when said lock actuating means is in a retracted position.

3,961,558

POSITIVE-DISPLACEMENT HYDRAULIC MOTOR

Alexandr Viktorovich Dokukin, Zemledelchesky pereulok, 12, kv. 9; Jury Evgenievich Tyablikov, ulitsa Kastanaevskaya, 31, korpus 1, kv. 8, both of Moscow; Anatoly Yakovlevich Rogov, poselok VUGI, 8, kv. 15, Moskovskaya oblast, Ljubertsy-4; Valerian Mikhailovich Berman, Smolenskaya ulitsa, 7, kv. 67, Moscow; Jury Arsentievich Nikitin, ulitsa Vostrukhina, 6, korpus 2, kv. 76, Moscow, and Leonid Solomonovich Feifets, ulitsa Udaltsova, 13, kv. 9, Moscow, all of U.S.S.R.

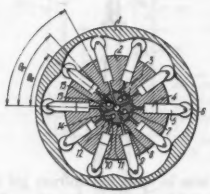
Filed Nov. 19, 1974, Ser. No. 525,110

Claims priority, application U.S.S.R., Nov. 20, 1975, 1967422

Int. Cl.² F01B *13/06*; F15B *21/02*

U.S. Cl. 91—35 **4 Claims**

1. A positive-displacement hydraulic motor comprising: a guide element; a valve; a block of variable volume chambers; ports made in the surface of said valve and grouped in pairs so that one port of the pair communicates with a delivery line and the other one communicates with a discharge line; distribution ports made at the side of said unit of the variable volume chambers facing said valve; each of said chambers of said block communicated by means of a commutation channel with one of said distribution ports; a closer member accommodated in each of said chambers of the block and being in a permanent engagement with a surface of said guide element facing thereto; a surface of said guide element facing said block and divided into cam portions so that said closer member performs a complete stroke within the limits of each of said separate cam portions; said variable volume chambers of said unit and cam portions having spacings being not aliquant with respect to each other; said valve being capable to perform a positive, independent and continuous movement during the operation of the motor; said variable volume chambers of said block; said pairs of ports of the valve and said cam portions of the guide element having spacings which are selected respectively from the following relationship:



$$\frac{1}{Q_r} = \frac{n}{\theta_z} + \frac{K}{\theta_z}$$

whereby with a predetermined speed of the valve the operating conditions of the hydraulic motor can be preselected, wherein:

θ_r, θ_z, θ_z are spacings between pairs of ports of the valve, variable volume chambers and cam portions of the guide element respectively;

n and K are factors selected to provide a predetermined ratio between the speeds of the guide element, block of variable volume chambers and the valve, the factor n being equal to an integer including null, and the factor K being equal to any integer which is represented by a coprime number with respect to the greatest possible number of non-coherent variable volume chambers except for null and number fulfilling the relationship:

$$K = -n\frac{\theta_z}{\theta_z}$$

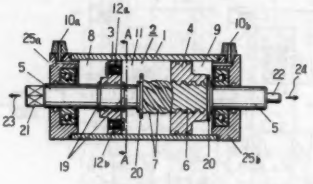
wherein the factor K correlates the numbers of the variable volume chambers in order of their arrangement in the block with the numbers of the distribution ports in order of their arrangement on the surface facing the valve so that each value of numbers of one of these elements and the product of the number of another element communicating therewith through the communication channel by factor K represent modulo

residues of a maximum possible number of non-coherent variable volume chambers.

3,961,559
ACTUATOR

Hiroshi Teramachi, No. 34-8; Higashi-tamagawa 2-chome, Setagaya Tokyo, Japan

Filed Nov. 18, 1974, Ser. No. 524,997
Int. Cl.² F01B *21/02*; F15B *11/20*, *13/06*
U.S. Cl. 91—189 R **3 Claims**

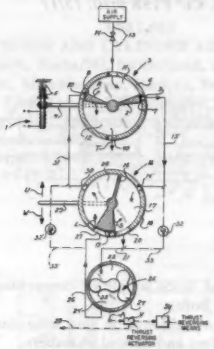


1. An actuator, operable by hydraulic fluid under pressure, comprising, in combination, an axially elongated cylinder having a non-circular cross-section throughout its length and having a central axis; end walls closing the opposite ends of said cylinder; first and second non-circular and non-rotatable axially spaced pistons in said cylinder in direct engagement with the interior surface thereof and dividing said cylinder into first and second end chambers and an intermediate chamber; a piston rod extending through said pistons and said end walls, to project beyond said end walls, coaxially with said center axis, said piston rod being rotatable relative to said pistons; means restraining relative axial displacement of said piston rod and said first piston; said piston rod being formed with at least one male spiral thread and said second piston being formed with at least one female spiral thread engaged with a respective said male spiral thread; first and second relief pressure valves in said first piston communicating with said first chamber and said intermediate chamber, and opening in respective opposite axial directions; said first relief pressure valve opening toward said first chamber and said second relief pressure valve opening toward said intermediate chamber; and first and second port means in respective end walls for selectively supplying hydraulic fluid to said chambers and exhausting hydraulic fluid therefrom, said first port means communicating with said first chamber and said second port means communicating with said second chamber; whereby, when said first port means is connected to exhaust and said second port means is connected to a source of hydraulic fluid under pressure, said first and second pistons will advance said piston rod, without rotation thereof, toward the end wall having said first port means with said first relief pressure valve blocking communication between said first chamber and said intermediate chamber until said first piston is blocked from further movement toward the end wall having said first port means; said second piston then advancing toward said first piston with the pressure in said intermediate chamber opening said first relief pressure valve to exhaust fluid from said intermediate chamber into said first chamber and out through said first port means, said second piston, due to its threaded engagement with said piston rod, rotating said piston rod; said first and second pistons, upon connection of said first port means to a supply of hydraulic fluid under pressure and said second port means to exhaust, initially moving said piston rod without rotation in a direction toward the end wall having said second port means with said second relief pressure valve blocking communication between said first chamber and said intermediate chamber; upon blockage of movement of said piston rod toward said end wall having said second port means and continued supply of hydraulic fluid to said first port means, said second relief pressure valve connecting said first chamber to said intermediate chamber opens to increase the pressure in said intermediate chamber to advance said second piston toward the end wall having said second port means to effect reverse rotation of said piston rod.

3,961,560
CONTROL MEANS FOR JET AIRCRAFT THRUST REVERSING MEANS

Eberhard Bader, Munich, Germany, assignor to Motoren- und Turbinen-Union Munchen GmbH, Munich, Germany

Filed Oct. 30, 1974, Ser. No. 519,171
Claims priority, application Germany, Nov. 2, 1973, 2354747
Int. Cl.² F15B *13/16*
U.S. Cl. 91—358 R **7 Claims**



1. For use with a thrust reversing means of an aircraft jet engine having jet deflector flaps and a source of pressurized air, control means for controlling the movement of the flaps between their retracted position and their deployed position, said control means comprising:

a. an air-driven actuator for operating the thrust reversing means, said actuator having first and second ports,

b. a control valve having first and second ports communicating with the first and second ports of said actuator, and a control valve member almost completely covering said control valve second port while leaving said control valve first port substantially unobstructed when the flaps are in their retracted position, said control valve member defining within said control valve a first chamber communicating with said control valve first port and a second chamber communicating with said control valve second port,

c. a pilot valve having an inlet port connected to the pressurized air source, an exhaust port, a first port communicating with said control valve first chamber, a pilot valve member for controlling flow of pressurized air from the source to said control valve first chamber, and a second port communicating with said control valve second chamber, said pilot valve member having a neutral position in which it closes both of said pilot valve first and second ports, and said pilot valve member permitting communication between said pilot valve second and exhaust ports when said pilot valve member is adjusted to permit flow of pressurized air from the source to said control valve first chamber,

d. means for adjusting said pilot valve member to permit flow of pressurized air from the source to said control valve first chamber when the flaps are to be moved from their retracted to their deployed position, and

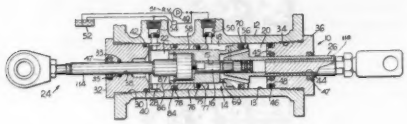
e. means responsive to operation of said actuator for moving said control valve member to gradually uncover said

control valve second port and gradually close said control valve first port, so that during the initial movement of said actuator pressurized air flows freely through said control valve first port but flow through said control valve second port is limited, during the final movement of said actuator pressurized air flows freely through said control valve second port but flow through said control valve first port is limited, and during movement of said actuator between its initial and final movements pressurized air flows freely through said control valve first and second ports.

3,961,561
PROPORTIONAL FORCE AMPLIFIER

Dale A. Knutson, Oconomowoc, Wis., assignor to Applied Power Inc., Milwaukee, Wis.

Filed Nov. 8, 1971, Ser. No. 196,495
Int. Cl.² F15B 9/10, 15/17
U.S. Cl. 91—378 10 Claims



1. A proportional force amplifier comprising a housing having a cylindrical bore,

a piston assembly positioned in said bore and separating said bore into first and second chambers,

means in said cylindrical bore for defining a third chamber separate from said first chamber,

a fluid inlet port in said housing connecting said first chamber to a fluid pressure source;

a fluid outlet port in said housing connecting said third chamber to a reservoir;

said piston assembly including a piston head having a working surface on one side positioned to respond to the pressure of the fluid in the first chamber and a control surface on the other side positioned to respond to the pressure of the fluid in the second chamber;

said working surface cross-sectional area being proportionately smaller than the cross-sectional area of the control surface;

an axial bore in said piston assembly having one end connected to said third chamber;

a first passage in said piston assembly connecting said first chamber to said axial bore;

a second passage in said piston assembly connecting said second chamber to said axial bore;

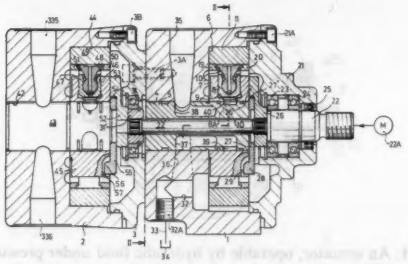
a spool valve positioned in said axial bore in said piston assembly, said valve including means for providing a continuous flow of fluid from said first passage through said bore to said second passage and to said third chamber whereby a predetermined pressure relation is maintained between said first chamber and said second chamber, said valve being selectively movable for connecting said second passage to one of the first passage or axial bore for discharge to the third chamber, said piston assembly moving in response to changes in pressure in said control chamber a distance equal to the distance of movement of said spool valve;

an actuating member positioned in said housing and being adapted for connection to an external input mechanism and means for resiliently connecting said spool valve to said actuating member to compensate for variations in concentricity between said actuating member and said spool valve.

3,961,562
MULTIPLE PUMP ASSEMBLY

Günter Kersten; Ulrich Aldinger; Emil Knodel, and Rainer Knoblauch, all of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 26, 1973, Ser. No. 428,613
Claims priority, application Germany, Jan. 12, 1973, 2301448
Int. Cl.² F01B 13/06
U.S. Cl. 91—492 18 Claims



1. A multiple pump assembly comprising a series of pumps having coaxial drive shaft means and including a first pump and at least one additional pump, said first pump constituting a radial piston pump and including a pintle coaxial with said shaft means, a cylinder block driven by said shaft means, rotatably surrounding said pintle and having radial cylinders, fluid displacing and pressurizing pistons in said cylinders, and a slide block surrounding said pistons and being eccentric with respect to said cylinder block so as to effect reciprocatory movements of said pistons in response to rotation of said cylinder block, said pintle having channel means for evacuation of fluid which is pressurized by said pistons and an axial bore for a portion of said shaft means, said additional pump having a rotary element driven by said portion of said shaft means; and first and second coupling means for respectively transmitting torque from said shaft means to said cylinder block and said rotary element.

3,961,563
AXIAL PISTON MACHINE OF THE TYPE HAVING A TILTABLE CYLINDER BLOCK

Ludwig Wagenseil, Vohringen, and Horst Deininger, Unterbalzheim, both of Germany, assignors to Hydromatik GmbH, Ulm, Danube, Germany

Filed Mar. 1, 1974, Ser. No. 447,225
Claims priority, application Germany, Mar. 19, 1973, 2313575
Int. Cl.² F01B 13/04
U.S. Cl. 91—506 6 Claims

1. In an axial piston machine of the type having a machine body, a tiltable cylinder block, an axis of rotation extending through the cylinder block, a socket plate rotated in fixed bearings in the body by a drive shaft, an axis of tilt for the tiltable cylinder block extending through the socket plate, pistons operatively coupled with the socket plate by ball and socket joints in the socket plate, a valve plate at the piston end of the cylinder block adapted to be displaced by a stroke control mechanism and effective to tilt the block about the tilt axis on such displacement, a cylindrical slideway in the body for supporting the valve plate, said valve plate having a front face engaged with and subjected to the hydraulic end thrust at the piston end of the cylinder block and a back face shaped conformably to and engaged with the cylindrical slideway, and side faces in the body of the machine which guide the sides of the valve plate and prevent displacement of the valve plate in the direction of the axis of tilt, the improvement comprising,

at least one of the front and back faces of the valve plate having a spherically arched curvature so related to the geometry of the hydraulic end thrusts exerted by the piston ends of the cylinder block on the valve plate as to cause the hydraulic end thrusts to generate an asymetrical laterally directed force component effective to maintain one of the sides of the valve

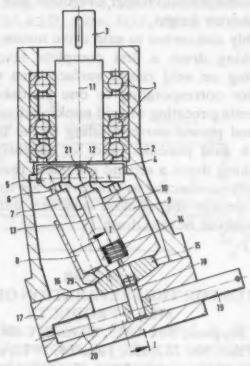


plate in continuous lateral contact with a cooperating side face in the body of the machine without jamming and wedging of the valve plate in the slideway when the tilt of the cylinder block is adjusted regardless of the existing load and without additional guiding and locating means whereby the valve plate can be actuated by a small adjusting force whatever the hydraulic pressure in the cylinders.

3,961,564

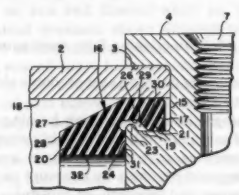
FLUID MOTOR AND COMBINATION BUMPER AND SEALING RING THEREFOR

Beldon R. Rich, Des Plaines; Richard J. Gallagher, Glenview, and John F. Berninger, Des Plaines, all of Ill., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 337,914, March 5, 1973, abandoned. This application May 14, 1974, Ser. No. 469,651

Int. Cl.² F01B *11/02*

U.S. Cl. 92—85 R **3 Claims**



1. In combination, a fluid motor having a cylinder defining a bore and including an end cap at one end; said end cap having an end portion which extends axially into said cylinder bore from said one end thereof; said end portion having an inner wall extending axially inwardly from said one end and radially spaced with respect to said cylinder bore; an inner end surface extending in the radial direction at the axially innermost end of said inner wall and projecting radially outwardly beyond said inner wall, said inner end surface being radially spaced with respect to said cylinder bore; an outer end surface extending radially from said inner wall to said cylinder bore; a piston reciprocable in said cylinder; and a one-piece combination seal and bumper ring of resiliently deformable material having a sealing portion radially squeezed between said bore and said inner wall into sealing engagement therewith and having a bumper portion extending radially inwardly with respect to said cylinder bore and axially inwardly with respect to said inner and surface; said bumper portion having annular end walls respectively in juxtaposition to said inner end surface and engageable by said piston to apply axial compressive force on said bumper portion to deform the latter thus to cushion the end portion of the piston stroke; said sealing portion having axial clearances with said outer end surface and the radially outer portion of the end wall of said bumper portion which is in juxtaposition to said inner end surface having axial clearances with the radially outer portion of said inner end surface and defining an annular groove in said bumper portion extending axially inwardly from said inner end surface for axial sliding movement of said sealing portion during deformation of said bumper portion between said piston and said inner end surface.

3,961,565

PISTON AND CYLINDER ASSEMBLY

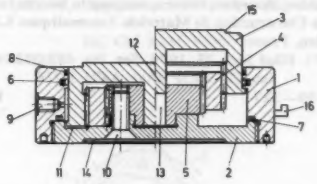
Heinz Lampert, Buchs/SG, Switzerland, assignor to Fa. Werner Looser, Maschinenbau, Riedern, Switzerland

Filed Apr. 2, 1975, Ser. No. 564,296

Claims priority, application Switzerland, Apr. 9, 1974, 4965/74

Int. Cl.² F01B *15/02;* **F16C** *1/26, 17/06*

U.S. Cl. 92—117 R **6 Claims**



1. The combination of a cylinder component, a piston component axially reciprocable within said cylinder component, and a cylindrical guide ring operatively interposed between said cylinder and piston components, said guide ring being provided at its inner and outer peripheries with oppositely slanted thread means meshing respectively with complementary thread means on said cylinder and piston components.

3,961,566

METHOD FOR FORMING PATCH TOP CONTAINER END AND CLOSURE MEMBER ASSEMBLY

Teddy M. Westphal, Chesterfield, and Robert J. Hough, Ballwin, both of Mo., assignors to Boise Cascade Corporation, Boise, Idaho

Filed Dec. 9, 1974, Ser. No. 530,547

Int. Cl.² B31B *1/90*

U.S. Cl. 93—36 B **11 Claims**

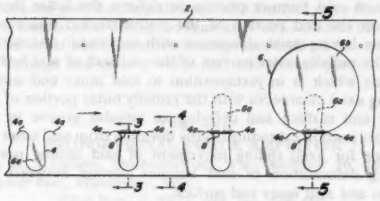
1. The method of forming from a web (2) of sheet material a patch top closure member (6) having body (6*b*) and tab (6*a*) portions, and assembling the closure member within a reusable overcap member (20) having a planar body portion (20*a*) and a continuous circumferential flange portion (20*b*), which comprises the steps of:

a. cutting a first portion of the web along a discontinuous line (4) to define the tab portion (6*a*) of the closure member;

b. initially bending the tab portion about a fold line (8) through an angle of 90° to a position normal to the web;

c. subsequently progressively bending the tab portion about said fold line through a further angle of 90° to a reversely bent position in engagement with a first face of a second portion of the web;

d. severing said second web portion from the web to define the patch top closure member (6), the body portions of said closure and overcap members having congruent circumferential configurations; and



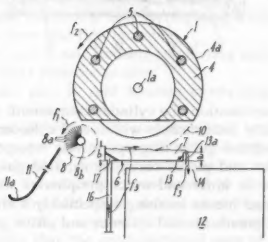
e. introducing the patch top closure member within the overcap member in seated engagement with the body portion thereof, the first face of said closure member facing said overcap body portion and said tab portion being arranged between said first face and said overcap body portion.

3,961,567

MACHINE FOR AUTOMATICALLY MAKING PANCAKES

Rene Munier, Dourdan, France, assignor to Societe Industrielle pour la Construction de Materiels Automatiques S.I.C.M.A., Dourdan, France

Filed June 25, 1974, Ser. No. 483,002
Int. Cl.[2] A23P *1/00*; A47J *37/10*
U.S. Cl. 99—327 10 Claims



1. A machine for automatically making pancakes, said machine comprising:

a heated cooking drum rotatably mounted about an axis, said drum having on the periphery thereof at least one raised surface area having a contour corresponding to the shape of pancakes to be made;

a batter pan positioned beneath said cooking drum, said batter pan having a plurality of walls, at least one of said walls having a height less than that of the remainder of said walls and an exterior wall face;

a batter supply container positioned beneath said batter pan and having an opening positioned vertically beneath said exterior wall face of said one wall;

means for supplying batter from said container to said batter pan;

drive means for rotating said cooking drum about said axis to bring said raised surface area into contact with batter within said batter pan, whereby a pancake is formed and cooked on said raised surface area;

means for detaching and removing cooked pancakes from said raised surface area, said detaching and removing means comprising a brush rotatable in the same direction as and at a peripheral speed greater than said drum, said brush having flexible radial bristles positioned to contact said raised surface area during rotation of said drum; and

coin operated control means, operable in response to the insertion therein of a predetermined quantity of coins, and:

operably connected to said batter supplying means for supplying batter to said batter pan for a predetermined period until said batter overflows said at least one wall of shorter height,

operably connected to said drive means for rotating said cooking drum a first complete revolution to cause setting on said raised surface area of a quantity of batter corresponding to one pancake, for thereafter arresting rotating of said cooking drum for a predetermined period corresponding to the time necessary to cook said pancake, and for thereafter rotating said cooking drum a second complete revolution; and

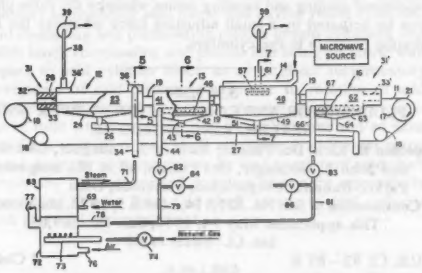
operably connected to said brush for rotating said brush to remove the cooked pancake during said second revolution of said drum.

3,961,568

APPARATUS FOR THE PREPARATION OF PRE-COOKED MEAT PRODUCTS

Morris R. Jeppson, Box 4943, Carmel, Calif. 93921

Division of Ser. No. 262,636, June 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 106,641, Jan. 15, 1971, abandoned. This application Feb. 14, 1974, Ser. No. 442,412
Int. Cl.[2] A47J *37/00*; H05B *9/06*
U.S. Cl. 99—339 7 Claims



1. Apparatus for pre-cooking fatty meat products comprising:

conveyor means for carrying said products along a predetermined path of travel,

means forming a steam preheating housing around a first portion of said path of travel of said conveyor means for partially cooking said meat products and for partially dehydrating said products by exposure to steam through the rendering and removal of moisture containing fat from said products by said steam,

means for maintaining the temperature in said steam preheating housing at a level at which fat is rendered from said product by supplying steam to said steam preheating housing means,

electrically conductive means forming a microwave energy housing around at least a portion of the subsequent path of travel of said conveyor means,

means for injecting microwave energy into said microwave housing to generate cooking heat within said products,

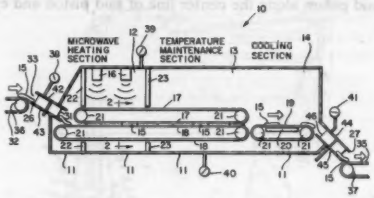
additional heating means for maintaining a hot non-aqueous gas environment around at least a portion of said subsequent path of travel of said conveyor means to assure cooking of the surface regions of said product, and

means for preventing accumulation of steam within said microwave housing.

3,961,569
APPARATUS FOR CONTINUOUS MICROWAVE STERILIZATION OF FOOD IN POUCHES

Ernest M. Kenyon, Medfield; Daniel Berkowitz, Wellesley, and John A. Ayoub, Dedham, all of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 15, 1974, Ser. No. 497,789
Int. Cl.[2] A23L *3/04, 3/32;* **H05B** *9/00*
U.S. Cl. 99—451 **4 Claims**



1. Apparatus for sterilizing food sealed in flexible, microwave-permeable pouches, including in combination:

a tunnel pressurized above atmospheric pressure comprising a microwave heating section, a temperature maintenance section, and a cooling section, said microwave heating section having a source of microwaves for heating said food to sterilizing temperatures, said temperature maintenance section comprising a space wherein said food sealed in said flexible, microwave-permeable pouches is maintained at said sterilizing temperatures after said food passes out of said microwave heating section for a length of time sufficient to accomplish sterilization of said food, said cooling section having means for reducing the temperature of said food after sterilization thereof sufficiently to prevent bursting of said pouches when exposed to the atmosphere outside of said pressurized tunnel,

means for introducing said flexible, microwave-permeable pouches into said pressurized tunnel at an entrance end thereof while an atmosphere of predetermined pressure above atmospheric pressure is maintained within said pressurized tunnel,

means for removing said pouches from said pressurized tunnel at an exit end thereof while an atmosphere of predetermined pressure above atmospheric pressure is maintained within said pressurized tunnel,

two parallel, spaced apart, heat-insulated, endless conveyor belts, one of said conveyor belts being positioned above the other of said conveyor belts and spaced from said other conveyor belt a distance which is substantially equal to the thickness of said flexible pouches of food, said conveyor belts being contained within said microwave heating section and said temperature maintenance section of said pressurized tunnel, at least one of said two parallel, spaced apart, heat-insulated, endless conveyor belts being microwave-permeable,

a third endless conveyor belt contained within said cooling section of said pressurized tunnel,

means for driving each of said endless conveyor belts,

said two parallel, spaced apart, heat-insulated, endless conveyor belts being adapted to receive said flexible pouches of food from said introducing means and to convey said flexible pouches of food therebetween through said microwave heating section and said temperature maintenance section of said pressurized tunnel and to deposit said flexible pouches of food in succession onto said third endless conveyor belt,

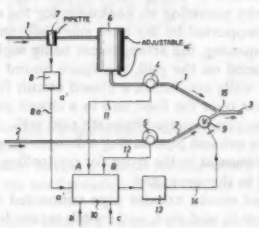
said third endless conveyor belt being adapted to receive said flexible pouches of food from said two parallel, spaced apart, heat-insulated, endless conveyor belts and to convey said flexible pouches of food through said cooling section of said pressurized tunnel and to discharge said flexible pouches of food from said cooling section into said removing means;

whereby said food sealed in said flexible pouches is irradiated by said microwaves while said pouches are being conveyed through said microwave heating section, said food being heated by said microwaves to temperatures effective for sterilizing said food, at which temperatures said pouches are held while being conveyed through said temperature maintenance section wherein said food becomes sterilized, said flexible pouches of food thereafter being cooled while being conveyed through said cooling section sufficiently to prevent bursting of said pouches when exposed to the atmosphere outside of said pressurized tunnel, said flexible pouches of food being discharged from said third conveyor belt into said removing means and thereafter being discharged from said removing means into the atmosphere outside of said pressurized tunnel in a sterilized condition.

3,961,570
APPARATUS FOR OBTAINING A SPECIFIC FAT CONTENT IN MILK

Ulrich-Christian Sanden, Hildesheim, Germany, assignor to Diessel GmbH & Co.

Filed May 31, 1974, Ser. No. 475,095
Claims priority, application Germany, July 5, 1973, 2334239
Int. Cl.[2] A23C *9/00*
U.S. Cl. 99—452 **19 Claims**

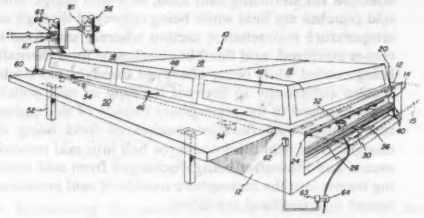


1. An apparatus for obtaining a given fat content in milk wherein whole milk and skimmed milk are mixed, comprising a first supply line for whole milk and a second supply line for skimmed milk, said first supply line having a first volumeter and a first opening connected to a common mixing line, said second supply line having a second volumeter and a second opening connected to said common mixing line, an adjustable valve acted on by a regulator being arranged in said second supply line, an automatic sampling device (7) comprising a fat content evaluator (8) arranged in said first supply line (1) in front of said first volumeter (4), said sampling device (7) being connected to a computer (10) which is actuated by signals from said volumeters (4,5) and is combined with the regulator (13) and the volume of said first supply line (1) is such that the time taken by the milk to pass through it corresponds to the evaluation time of the sample from the time of taking the sample to the time said adjustable valve (9) is adjusted.

3,961,571
OVEN FOR COOKING FOOD BY A HOT SMOKE PROCESS

Arthur Decuir, 825 Morrison Ave., Bronx, N.Y. 10472

Filed Feb. 11, 1972, Ser. No. 225,567
Int. Cl. A23b *1/04*
U.S. Cl. 99—474 1 Claim



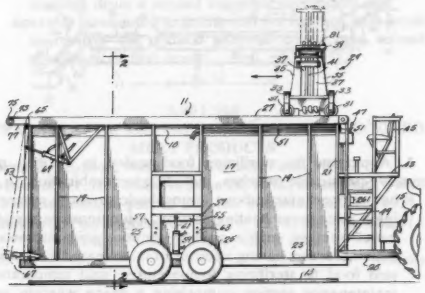
1. An oven for cooking food by a hot smoke process comprising:
- a base having an open top and side walls including an opening in one end for receiving fuel for combustion purposes;
- a grate in said base adjacent the opening on which solid fuel is placed for furnishing heat to the oven;
- a removable pan beneath said grate for receiving the residue resulting from combustion of the fuel;
- supplementary heat means including a gas burner mounted near the grate for initially igniting the solid fuel and reigniting portions thereof in the event it becomes extinguished, said burner comprising an arm mounted between a pair of parallel bars in said base, said arm and attached burner being movable beneath and along the width of said grate;
- hood means covering the top opening in said base and thereby providing an enclosure for the oven;
- a grill supported by the base side walls and located in said top opening, the arrangement being such that when food is placed on the grill, the space bound by the hood and base walls establishes a closed circuit for the circulation of heat over the food and in a closed path in the oven;
- a grease pan mounted beneath said grill;
- a smoke exhaust pipe having a damper therein connected to a thermostat in the oven for controlling the temperature level in the oven; and
- a second smoke exhaust pipe connected with said oven, a blower in said pipe, and switch means for energizing said blower when it is desired to vent hot gases from the oven to the atmosphere prior to opening said hood means.

3,961,572
TRAMPER FOR COTTON MODULE MAKER

Douglas Johnston, Decatur, Ala., assignor to John Blue Company Division of Subscription Television, Inc., New York, N.Y.

Filed Apr. 29, 1974, Ser. No. 465,437
Int. Cl.[2] B30B *15/28, 1/32*
U.S. Cl. 100—53 17 Claims

1. A tramper mechanism for forming cotton modules comprising:
- a frame having opposed side walls and openings at the top and bottom thereof, said frame having a closable door forming the rear wall thereof,
- a carriage mounted on said frame at the top thereof between said opposed side walls, said carriage being movable along the longitudinal length of said frame,
- a tramper footing vertically movable with respect to said carriage and extending transversely across said frame between said side walls, said tramper footing compacting cotton within said frame to thereby form a cotton module,
- hydraulic means releasably fixed to said carriage in an operational position for raising and lowering said tramper footing with respect to said carriage, said hydraulic means including a hydraulic cylinder releasably fixed with respect to said carriage, a piston rod secured at one end to said tramper footing and mounted in said cylinder for reciprocal movement with respect thereto, a piston means reciprocably positioned in said cylinder and connected to the other end of said piston rod, means for moving said piston longitudinally in said cylinder, means for directing the force generated by said cylinder against said piston along the center line of said piston and cylinder, said directing means comprising a first spherical bearing means for joining said piston rod to said tramper footing;
- latching means for releasing said hydraulic means from said operational position to a retracted position within said frame to thereby permit the transportation of said tramper mechanism from one place to another; and
- safety means for enabling said latch releasing means when said tramper footing is at its lowest operational position, said safety means inhibiting said latch releasing means when said tramper is raised with respect to said lowest operational position.



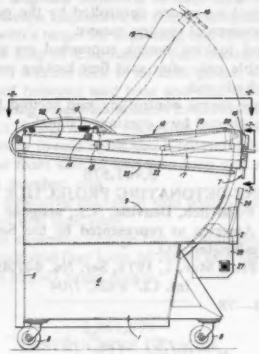
3,961,573
REFUSE BIN WITH POWER-ACTUATED COMPACTOR BLADE

Lewis W. Schmidt, Rio Vista, Calif., assignor to Blackwelders, Rio Vista, Calif.

Filed Mar. 3, 1975, Ser. No. 554,912
Int. Cl.[2] B30B *1/34, 15/06*
U.S. Cl. 100—100 6 Claims

1. In a portable refuse bin embodying a normally closed cover, the cover being hinged to the bin for gravitational opening to permit discharge of refuse from the bin upon inversion thereof, a normally engaged but releasable latch between the bin and cover, the cover having an opening through which refuse can be deposited in the bin, a normally closed lid embracing such opening, the lid being hinged to the cover for manual opening to permit such deposit of refuse, and a normally engaged but releasable latch between the lid and the cover; the improvement characterized by the inclusion of a compactor blade normally closely underlying the lid, means hinging the compactor blade on the lid for downward pivotal sweeping therefrom into the bin, power means confined in the space between the lid and compactor blade and mounted in direct connection therebetween, said power means being

operative, when the lid is closed and latched, to forcefully pivotally sweep said compactor blade downwardly into the bin

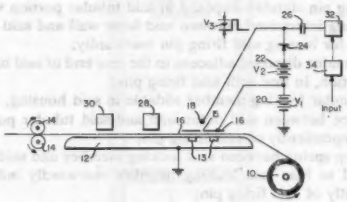


to compact refuse previously deposited therein, and means on the bin to control the power means from exteriorly of said bin.

3,961,574
ELECTROSTATIC BAR CODE PRINTER

Richard A. Fotland, Aurora, Ohio, assignor to Horizons Incorporated, Cleveland, Ohio

Filed Jan. 15, 1975, Ser. No. 541,292
Int. Cl.² B41J 3/18
U.S. Cl. 101—1 **1 Claim**



1. A printing apparatus for generating a visible bar code image in accordance with an electronic input command which comprises:

an electrically conducting planar mask containing at least one slot, the length of each slot corresponding to the height of a bar within the bar code image to be printed and the width of each slot being a few mils;

a fine diameter ion emitting wire positioned adjacent to one surface of said mask and parallel to said at least one slot;

an electrically conductive support member positioned adjacent the opposite surface of said mask, so as to define a passage between said mask and said electrically conductive support member;

means to transport an insulating, latent-charge receiving web through said passage adjacent to but spaced from the surface of said mask opposite to the surface adjacent which said wire is positioned, while said web is in the passage between said support and said mask;

means to hold said web in physical contact with said support while it is in said passage, said means including means to apply a vacuum to said web as it is transported past said slot to overcome the electrostatic forces tending to lift said web from said support;

means to maintain an electrical potential between said mask and said electrically conductive support and means electrically connected to said last named means to bias said ion emitting wire at a potential just below the corona threshhold voltage;

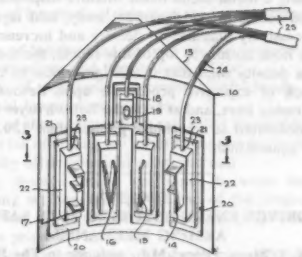
electronic input command means to apply a high voltage pulse to said ion emitting wire for a selected variable interval corresponding to the bar width which is to be printed for varying the width of each printed bar to a width, smaller, greater or equal to the width of said slot thereby forming a latent charge image on said web; and

means to tone said latent image whereby said bar code image is printed as a visible image.

3,961,575
PRINTING APPARATUS FOR USE ON PLASTIC CONTAINERS

Rowena Ann Rodabaugh, 10110 Sepulveda No. 27, Mission Hills, Calif. 91340

Filed Apr. 12, 1974, Ser. No. 460,587
Int. Cl.² B44B 5/02; B41F 17/20
U.S. Cl. 101—9 **10 Claims**



1. A printing device for applying indicia to the surface of a workpiece including

a backing member having a frontal surface which generally conforms to the configuration of said surface of the workpiece,

a resilient member attached to said frontal surface of the backing member,

a heater assembly disposed upon and attached to said resilient member,

insulation means interposed between said heater assembly and said resilient member,

a rigid, permanent-configuration die member attached to said heater assembly and disposed in heat transfer relationship with said heater assembly,

a sheet of printing material having on one side thereof a coating of heat sensitive material,

said sheet of printing material being disposed between said die member and said workpiece with said coating being on the side adjacent said workpiece, and

motive means for moving the die member into registry with said workpiece to compress a portion of said sheet of printing material against the workpiece,

whereby the heated die member causes that area of heat sensitive material overlying the die member to be released from the sheet of printing material and to be deposited on the work piece and,

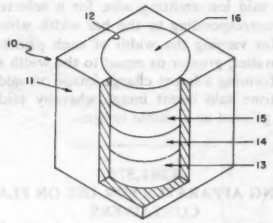
whereby movement of said die members into engagement with the workpiece by said motive means causes an automatic alignment of said die members with the workpiece due to the presence of the resilient means.

3,961,576

REACTIVE FRAGMENT

Hugh E. Montgomery, Jr., 209 N. Randolph Road, Fredericksburg, Va. 22401

Filed June 25, 1973, Ser. No. 375,246
Int. Cl.[2] F42B 13/48
U.S. Cl. 102—67 6 Claims



1. A reactive fragment for an ordnance item adopted to release both chemical and mechanical energy upon impact with a target comprising:

a fragment body having a blind recess formed therein; and

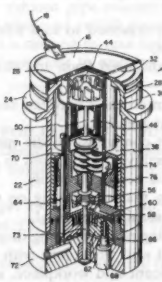
a plurality of layers of a chemically reactive material comprising a metal-metal oxide mixture disposed within said blind recess in said fragment body, said layers being of successively diminishing density and increasing reaction rate from bottom to top of said recess, the top layer being of a density such that it will ignite due to the heat and shock of explosive projection upon detonation of the ordnance item, and at least the bottom layer having been consolidated at a pressure greater than 130,000 pounds per square inch.

3,961,577

AIR DRIVEN ENERGY STORING FUZE SAFING AND ARMING MECHANISM

James K. O'Steen, Olney, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 12, 1975, Ser. No. 576,753
Int. Cl.[2] F42C 5/00, 15/12
U.S. Cl. 102—70.2 G 18 Claims



1. A safing-and-arming mechanism for ordnance fuzes having no stored arming energy comprising:

a housing;

environmental sensing means slidably positioned within and extendible from said housing;

means responsive to air speed to power an electric generator and a driving gear train;

a rotor supporting a component of an explosive firing train and operatively coupled to the gear train to be displaceable from an out-of-alignment, safe position to an aligned, armed position;

torquing means coupled to the driving gear train to supply a rotary force to said rotor; and

rotor immobilizing means to maintain said rotor in the out-of-alignment, safe position, including:

a first locking means controlled by the position of said environmental sensing means;

a second locking means supported on said rotor and operable only after said first locking means has been unlocked; and

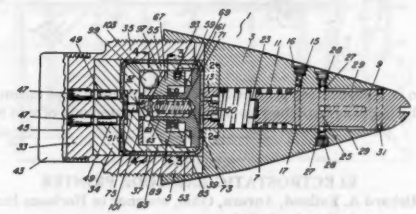
retracting means controlling said second locking means and activated by a command signal.

3,961,578

POINT-DETONATING PROJECTILE FUZE

Dragolyoub Popovitch, Denville, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 1, 1974, Ser. No. 447,452
Int. Cl.[2] F42C 1/04
U.S. Cl. 102—78 11 Claims



1. An inertial graze-impact fuze comprising:

a hollow cylindrical housing including outer, front and rear walls; said housing having a tubular portion extending axially from one of said front and rear walls with at least one radial opening therein;

a firing pin slidably disposed in said tubular portion with a spring interposed between said front wall and said firing pin for biasing said firing pin rearwardly;

a detonator disposed adjacent to the rear end of said tubular portion, in line with said firing pin;

an annular locking member slidable in said housing, in the space between said outer wall and said tubular portion, independently of said firing pin;

a creep spring between said locking member and said front wall to bias said locking member rearwardly independently of said firing pin;

spin-releasable detent means locking said locking member in a rearward position in the safe condition of said fuze;

a detent ball disposed partially in said opening for locking said firing pin in a safe position spaced from said detonator, and means carried by said locking member for holding said detent ball in locking position in said safe condition; and

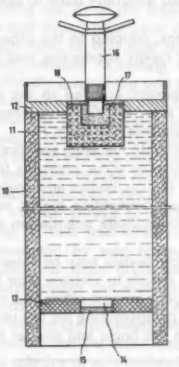
inertia means, responsive to transverse or graze impact of said fuze with a target, for positively moving said locking member forwardly in opposition to said creep spring, after being released by said detent means during launch, to release said detent ball and unlock said firing pin, whereby said firing pin is free to be moved rearwardly by its spring to fire said detonator after the forward inertia force of said firing pin at impact becomes less than the force of said firing pin spring; said inertia means comprising a plurality of spherical weights all of which initially engage outer portions of at least one outwardly-and-forwardly inclined camming surface on the rear end of said locking member and a radial surface at the rear of said housing, and at least one of which moves inwardly upon said graze impact to move said locking member forwardly.

5. A fuze structure for an explosive projectile, comprising:
a cup-shaped base;
an ogive member attached to the open end of said base to form therewith a coaxial cylindrical cavity;
an inertial fuze disposed in said cavity and including a first detonator disposed adjacent to said base and inertia-operated means responsive to transverse graze impact of said fuze with a target for exploding said first detonator;
a continuous loop of combustible fuze material extending around said inertial fuze in an axial plane, with the rear side thereof between said base and said first detonator, said loop being otherwise isolated from said inertial fuze;
direct-impact firing means including an axially-movable firing member in said ogive and a second detonator adjacent to the front side of said fuze loop and aligned with said firing member; and
at least one explosive charge in said base adjacent to said rear side of said fuze loop;
whereby said explosive charge can be independently initiated, through said fuze loop, by either said inertial fuze or said direct-impact firing means.

3,961,579
DESTRUCTIVE DEVICES

Walter Faber, Pionierbohe, and Paul Huber, Jettenberg, both of Germany, assignors to Firma Beck K.G., Germany

Filed Dec. 14, 1973, Ser. No. 424,741
Claims priority, application Germany, Jan. 2, 1973, 2300043
Int. Cl.² F42B 11/24
U.S. Cl. 102—90 **6 Claims**

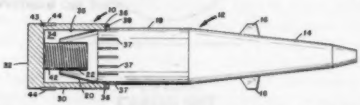


1. An apparatus for the destruction of equipment such as machines, tanks, and tank gun barrels comprising a casing, an alumino-thermically reacting mixture contained within the casing, fuse means for igniting the mixture to produce a heat-generating alumino-thermic reaction, and outlet means for outwardly conducting the hot, liquid-like reaction products of the ignited mixture onto said equipment to be destroyed, the improvement wherein:
said alumino-thermic mixture has a reaction period less than ten seconds;
said casing comprising a reaction-confining protion and an outflow portion;
said outflow portion being formed of a material less heat resistant than said reaction-confining portion so as to discharge said reaction products in a given direction during said reaction while said reaction-confining portion confines said reaction products to discharge in said given direction;
said reaction-confining portion consisting of a heat resistant paper whose heat resistance is selected in relation to the reaction period so that said reaction-confining portion confines said reaction products during the reaction period and decomposes immediately upon completion thereof.

3,961,580
ENERGY-ABSORBING SABOT

William M. Burnett, Oxon Hill, and Albert W. Horst, Jr., Accokeek, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 27, 1975, Ser. No. 553,848
Int. Cl.² F42B 13/16
U.S. Cl. 102—93 **4 Claims**



1. In combination, a subcaliber projectile and a sabot for launching the projectile comprising:
a sabot positionable adjacent the aft portion of the projectile, said sabot having an obturating surface;
a plurality of longitudinal ridges on the inner surface of said sabot;
a plurality of longitudinal grooves on the projectile which slidably receives said longitudinal ridges;
a plurality of positioning recesses longitudinally spaced along said longitudinal grooves;
a plurality of shear elements on said sabot receivable in said recesses for attaching the sabot to the projectile in one of a plurality of longitudinal positions; and
an energy storage means positioned between the sabot obturating surface and the aft end of the projectile for effectuating sabot separation from the projectile subsequent to projectile launch,
whereby the relative positioning of said sabot on the projectile establishes the overall length of the projectile and establishes an initial energy level in said energy storage means.

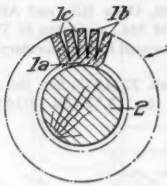
3,961,581
IGNITOR ELEMENT FOR A GENERATOR OF HOT GAS

Pierre Larue, Orsay, and Pierre Beaumont, Massy, both of France, assignors to Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.), Chabillon-Sous-Bagneux, France

Continuation of Ser. No. 366,166, June 1, 1973, abandoned, which is a continuation of Ser. No. 108,418, Jan. 21, 1971, abandoned. This application Apr. 30, 1975, Ser. No. 572,893
Claims priority, application France, Jan. 27, 1970, 70.02873
Int. Cl.² F42B 1/00
U.S. Cl. 102—99 **3 Claims**

1. An igniter element for a generator of hot gas, said igniter element comprising a deformable plate constituted of solid hot gas generating material, one face of said plate having continuous parallel striae constituted by single slits with initially contiguous lips and extending from one end to the other of said plate, the other face of said plate being unstriated, a rigid central mandrel against which said unstriated face is wound and fixed so that the plate forms a single layer on the exterior of the mandrel without overlapping, said slits being oriented at least approximately parallel to the axis of said central mandrel and the lips of said slits being flared outwardly because of the wound configuration of said deformable plate around said mandrel, said striae thus forming continuous outwardly open flame conducting channels open at their ends and providing a considerable passage cross-section for the

flow of the combustion products for a given diametric bulk, said mandrel being constituted of a material nonconsummable under the conditions of temperature and duration of operation



of the igniter, said igniter element having been fabricated by forming said parallel striae in said plate in an unwound state, and thereafter winding the striated plate around said central mandrel to thus open said striae toward the exterior.

3,961,582

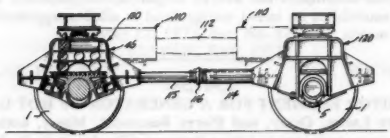
ARTICULATED RAILCAR

Hamilton Neil King Paton, 2521 W. Montlake Place E., Seattle, Wash. 98112, and John B. Skilling, 3000 Webster Pt. Road NE., Seattle, Wash. 98105

Continuation-in-part of Ser. No. 353,371, April 23, 1973, abandoned, which is a continuation of Ser. No. 189,379, Oct. 14, 1971, abandoned. This application Apr. 3, 1974, Ser. No. 457,422

Int. Cl.² B61F *3/00, 5/14, 5/18, 5/30*

U.S. Cl. 105—3 14 Claims



1. An articulated railcar unit, comprising: two car bodies having ends; forward and rearward trucks pivotally mounting the forward and rearward ends of said two car bodies, respectively, to swivel independently thereof, the forward truck assciated with one car body having a single axle, the rearward truck associated with the other car body having a single axle; means acting between the forward end of the one car body and the rearward end of the other car body for transmitting pushing and pulling forces therebetween; and means acting between said forward and rearward single axle trucks for maintaining their axles in parallel alignment while permitting relative longitudinal movement of said single axle trucks when negotiating curved track.

8. A double axle railcar truck system which comprises two trucks, each including a single axle, means for swivel mounting one single axle truck to an overhead railcar body, means for swivel mounting the other single axle truck to another railcar body, and means acting between said trucks for maintaining their axles in parallel alignment while permitting relative longitudinal movement of said trucks when negotiating curved track.

3,961,583

STABILIZED ARTICULATED CAR

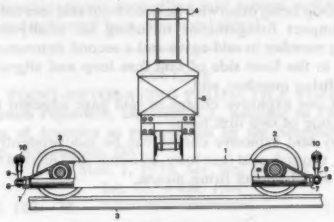
Roger Fagel, Marcinelle, Belgium, assignor to Ateliers de Constructions Electriques de Charleroi (ACEC), Charleroi, Belgium

Filed June 7, 1974, Ser. No. 477,289

Claims priority, application Belgium, June 19, 1973, 5177; Feb. 8, 1974, 5699

Int. Cl.² B61F *3/08, 3/12, 5/24, 5/52*

U.S. Cl. 105—4 R 8 Claims



1. A device for compensating for the rocking movements between a railroad bogie and articulated railroad car bodies, the ends of which are supported on the bogie, the device comprising:

a. a bogie having a frame;

b. a torsionally rigid, elongated member pivotally supported in said bogie by bearings;

c. first and second crank arms, one end of each crank arm being rigidly and integrally fixed to said elongated member;

d. first rigid means, coupled to the other end of said first crank arm, for rigidly connecting said first crank arm to one car body;

e. second rigid means, coupled to the other end of said second crank arm, for rigidly connecting said second crank arm to another car body;

f. means for selectively releasing said first and second rigid connecting means to allow generally free relative movement between the car bodies and bogie so that said first and second rigid connecting means may be released at lower speeds to facilitate negotiation of relatively tortuous track;

g. whereby the car bodies may be selectively coupled together at high speeds to restrain their freedom of movement with respect to each other and with respect to the bogie thereby compensating for the usual rocking movements between the bogie and the car bodies.

3,961,584

RAILWAY CAR TRUCK

Hamilton Neil King Paton, 2521 W. Montlake Place E., Seattle, Wash. 98112, and John B. Skilling, 3000 Webster Pt. Road NE., Seattle, Wash. 98105

Continuation-in-part of Ser. No. 353,371, April 23, 1973, abandoned, which is a continuation of Ser. No. 189,379, Oct. 14, 1971, abandoned. This application Apr. 3, 1974, Ser. No. 457,424

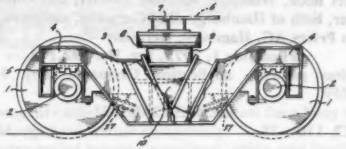
Int. Cl.² B61F *3/08, 5/14, 5/18, 5/30*

U.S. Cl. 105—182 R 27 Claims

1. A railway car comprising a truck including substantially parallel side frames spaced apart transversely, truss means having its length extending transversely of said truck, connecting said side frames and including a portion between said side frames torsionally flexible to enable said side frames to rock lengthwise of the truck relative to each other, car body means disposed above said truck, pivot means interconnecting said car body means and the central portion of said truss means, guiding said car body means and said truck for relative rotation about an upright axis, and means for transmitting the

weight of said car body to said side frames independently of said pivot means and said truss means.

2. A railway car truck having wheels and axles and comprising an elastically rigid H truck frame including side members and a unitary transverse member fixed to and rigidly connecting said side members such that the horizontal forces applied to said transverse member by a pivot pin depending from an overhead car body are transmitted through said transverse member to said side members while maintaining side member vertical tram and preventing side member parallelogramming, at least a portion of said transverse member being torsionally flexible to permit said side members to swing relatively in respective planes substantially perpendicular to the lengthwise axis of said transverse member to thereby maintain substantially equal wheel loading.



14. A railway car truck comprising a pair of side frames suitable for mounting a pair of wheeled axles, unitary structural means interconnecting the side frames between the axles and movably engageable with a depending car body vertical pivot pin, and side frame non-resilient low friction bearing means mounted on each side frame and adapted to mate with cooperative bearing means mounted by an overhead car body such that a depending car pivot pin transfers essentially no vertical loading to said structural means, the said railway car truck being characterized in that said structural means includes a transverse member extending between said side frames and means fixedly connecting said transverse member with said side frames such that said structural means constitutes an interconnection between said side frames that is relatively rigid against horizontal loading to maintain said frame vertical tram and to prevent side frame parallelogramming; in that said structural means including said transverse member is sufficiently torsionally flexible to enable the side frames to rock in vertical planes to maintain substantially equal wheel loading; in that said structural means includes centering means mounted by said transverse member for engaging a depending car body pivot pin for transmitting horizontal loads therebetween and said transverse member is adapted for transmitting horizontal loads to the side frames; and in that the side frames are provided with resilient suspension means; and wherein the car truck can rotate about the axis of the pivot pin relative to an overhead car body without causing side frame bearing means separation or non-uniform loading, and so as to simultaneously maintain the side frame bearing means in load support of an overhead car body.

24. A railway car truck, comprising: a pair of side frames suitable for mounting a pair of wheeled-axles, unitary structural means interconnecting said side frame between the axles and movably engageable with a depending car body vertical pivot pin, and side frame non-resilient low-friction bearing means mounted on each side frame and adapted to mate with cooperative bearing means mounted by an overhead car body for supporting an overhead car body such that a depending car body pivot pin transfers essentially no vertical loading to said structural means, said structural means including vertically spaced upper and lower plates extending between said side frames and secured thereto, at least two diagonal braces extending between said upper and lower plates, a first of said braces having one end secured to said lower plate adjacent a first outer end thereof and a second end secured to the central portion of said upper plate, and a second of said braces having one end secured to said lower plate adjacent a second outer end thereof and a second end secured to the central portion of said upper plate, the second ends of said first and second braces being spaced apart on either side of the center of said upper plate, said structural means constituting an interconnection between said side frames that is relatively rigid against horizontal loading to maintain side frame vertical tram and to prevent side frame parallelogramming, said structural means being sufficiently torsionally flexible to enable said side frames to rock in vertical plane to maintain substantially equal wheel loading, said structural means further including centering means for engaging a depending car body pivot pin for transmitting horizontal loads therebetween, said side frames further including resilient suspension means, and wherein the car truck can rotate about the axis of the pivot pin relative to an overhead car body without causing side frame bearing means separation or non-uniform loading; and so as to simultaneously maintain the side frame bearing means in load support of an overhead car body.

3,961,585

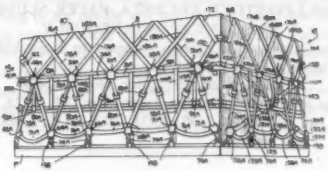
CARGO NET

Harold Brewer, Lexington, Ky., assignor to Irvin Industries, Inc., Greenwich, Conn.

Filed Nov. 11, 1974, Ser. No. 522,729

Int. Cl.² B66C *1/12*; B61D *45/00*

U.S. Cl. 105—469 **16 Claims**



1. A net of the type having a plurality of interconnected straps for securing a load to a support comprising:

a. front and rear sections adapted to be connected to the support;

b. respective side sections adapted to be connected to the support;

c. connectors for connecting together said front and rear sections to said side sections whereby said net surrounds the periphery of the load;

d. and a top section adapted to be placed over the top of the load and connecting said front and rear sections to said side sections whereby forces on said front and rear sections are applied to said side sections, said top section comprising diagonally extending straps for connecting respective intermediate points on said front and rear sections to different intermediate points on said side sections, said front and rear sections being identical in construction and comprising at least a first set of longitudinally spaced connecting members, said side sections being identical in construction and comprising at least a first set of laterally spaced connecting members, said diagonally extending straps interconnecting respective ones of said first set of longitudinally spaced connecting members of said front and rear sections to different ones of said first set of laterally spaced connecting members of said side sections.

3,961,586

SHELVING

Claude Bernard, 6, rue de la Fraiche, 25500 Morteau (Doubs), France

Filed Aug. 19, 1974, Ser. No. 498,727

Claims priority, application France, Aug. 24, 1973, 73.31303

Int. Cl.² A47B 47/04

U.S. Cl. 108—111 3 Claims

1. Collapsible shelving having rectangular boards laterally supported by vertical boards and rearwardly supported by vertically superposed rectangular boards having abutting edges joining tightly substantially along one of said horizontal boards and including at least one connecting part having projecting means thereon, each such means being inserted in a bore in a corresponding board, perpendicularly in respect to the direction of said abutting edges, so as to prevent said boards from moving laterally with respect to each other and prevent the shelving from breaking down laterally, each connecting part is located perpendicularly to the joint between adjacent vertical boards, the part having a cross-member of substantially rectangular section for fitment into a groove of complementary shape in the edge of at least one of the two vertical boards, the cross-member comprising extensions projecting radially from its ends, the extensions forming at least one reduced portion between opposed shoulders gripping in the region of the joint of the two members to be joined on the two large opposed sides of at least one of the latter.

3,961,587

COMBUSTION EQUIPMENT IN WHICH HUMID COMBUSTIBLE EXCRETA AND DISPOSED MATERIALS SUCH AS LIVESTOCK EXCRETA, PAPER SLUDGE CAN BE BURNT SPONTANEOUSLY

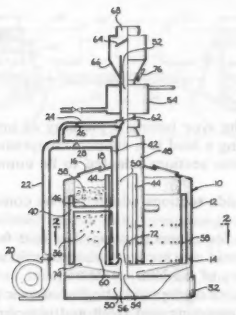
Takahisa Ozawa, Aichi, Japan, assignor to Yugenkaisha Sankyo Furnace, Owari-Asahi, Japan

Filed Nov. 20, 1974, Ser. No. 525,498

Claims priority, application Japan, Dec. 29, 1973, 49-572

Int. Cl.² F23G 5/00; F23J 5/02; F23L 17/00

U.S. Cl. 110—8 A 9 Claims



1. A furnace for a self sustaining combustion of moist waste material including animal excrement and paper sludge comprising a combustion chamber 48 in the center of a furnace body 10, said combustion chamber having a generally circular preheating air tank 42 on the outer circumference of said combustion chamber, said furance body having a crown 18 with inlets 16 defined therein to permit introduction of said waste material, a generally toroidal preheating air tank having apertures 58 defined therein on the inner wall, an ash dumping port 34 defined in the center of said furnace body, an ash collector 30 provided below said ash dumping port, said combustion chamber disposed vertically within said body, said ash dumping port disposed beneath said combustion chamber, said combustion chamber having a first plurality of upwardly directed air jets 56 disposed therein, said air jets communicating with said circular preheating air jacket, said circular preheating air jacket having apertures 60 defined in the outer circumferential wall and coupled to a plurality of preheating blast pipes 46, said preheating blast pipes being extended radially from said circular preheating air tank to said toroidal preheating air tank and being coupled thereto, said toroidal preheating air tank disposed within the inner wall of said furnace body, said circular preheating air tank being coupled to a turboblower 20 by a blast pipe 22.

3,961,588

THRUST GRATE WITH A SERIES OF OVERLAPPING ROWS OF PLATES

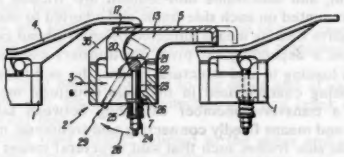
Herbert Bode, Wohltorf; Manfred Göllner, and Günther Köberer, both of Hamburg, all of Germany, assignors to Claudius Peters AG, Hamburg, Germany

Filed July 1, 1975, Ser. No. 592,172

Claims priority, application Germany, July 6, 1974, 2432599

Int. Cl.² F23B 1/22

U.S. Cl. 110—38 13 Claims



1. A thrust grate comprising:

a plurality of rows of grate plates;

each preceding row of plates overlapping the next following row of plates;

said rows of grate plates being alternatingly rigidly fixed and reciprocable in longitudinal direction of the grate;

grate plate supports arranged transversely to the longitudinal direction of the plates;

the rigidly fixed grate plates provided with fastening devices on said supports;

each said fastening device having:

support rib and plate surfaces extending essentially parallel to the longitudinal direction of the grates;

a stop surface, extending transversely to the said support surfaces on the grate plate support and on each grate plate;

a traction element holding the grate plate on the grate plate support; and

a wedge connection;

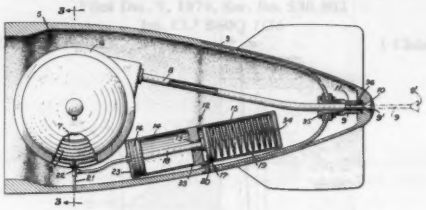
said wedge connection being formed by a wedge surface extending slantingly to the support plate surface and the support rib surface and in opposite direction to the said stop flange and plate surface on the grate plate, a wedge surface enclosing therewith a wedge angle on the reciprocable grate plate support and a wedge element pulled by the traction element into the wedge angle;

said traction element engaging by means of said wedge connection the said grate plate.

3,961,589
BUOYANT CABLE ANTENNA REELING SYSTEM

Anthony Joseph Lombardi, Flanders, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed July 11, 1975, Ser. No. 596,037
Int. Cl.² B63G 8/42
U.S. Cl. 114—16 R 14 Claims



1. A buoyant cable antenna reeling system for a buoy towed by a submerged submarine comprising:

a pressure sealed housing contained within said buoy;

a cable reel disposed for rotation within said housing;

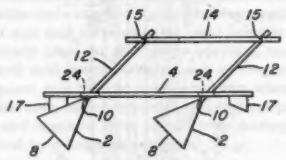
a buoyant cable antenna disposed in an ejecting and retracting relationship with said reel, said cable antenna having one end thereof extending from said housing to the exterior of said buoy; and

a cylinder-piston arrangement having a sea water inlet and a connection to said housing, said arrangement being responsive to the pressure of said sea water at said inlet to control air pressure in said housing to provide a pressure difference between said air pressure in said housing and the pressure of said sea water on said one end of said cable antenna exterior of said buoy for ejection and retraction of said cable antenna from and into said buoy.

3,961,590
CATAMARAN WATERCRAFT

Gust Kefalos, 523 E. Railroad Ave., Verona, Pa. 15147

Filed Sept. 19, 1974, Ser. No. 507,281
Int. Cl.² B63B 1/12
U.S. Cl. 114—61 7 Claims



1. A watercraft of the catamaran type comprising:

a pair of parallel pontoons, each pontoon having a substantially linear top surface forming a longitudinal axis of rotation, and widening downwardly and outwardly to a larger substantially planar bottom surface, with the bow portion of the bottom surface curving upward;

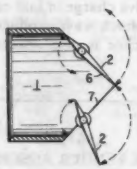
a deck supported by the top surface of each of the pontoons and secured to each pontoon so as to be pivotable about the longitudinal axis of that pontoon; and

control means attached to the pontoons for pivoting the pontoons relative to the deck such that rotational movement of either pontoon about its longitudinal axis causes a correlative rotational movement of the other pontoon about its longitudinal axis, whereby the rotation of the pontoons serves as the primary steering means for the watercraft.

3,961,591
DEFLECTOR RUDDERS

Ronald George Fuller, P.O. Box 337, Hudson Heights, Quebec JOP IJO, Canada

Filed Aug. 1, 1974, Ser. No. 494,531
Int. Cl.² B63H 25/06
U.S. Cl. 114—166 7 Claims

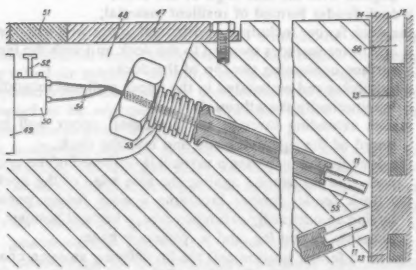


1. A propulsion and steering assembly for a marine vessel comprising a propeller operating within a nozzle, at least one end opening of said nozzle defined by inclined nozzle walls terminating in the form of inclined planes symmetrically intersecting at the nozzle centerline outboard of the intersection of said inclined planes with side walls of said nozzle thereby forming two inclined nozzle openings two balanced deflector rudders pivotally mounted across said two inclined nozzle openings and each said rudder having associated therewith a pivot axis lying vertically in one of said inclined planes, said deflector rudders profiled such that same may be turned within the nozzle profile to register with a respective one of said inclined nozzle openings to form a continuous solid barrier abutting to the nozzle side wall at one end whilst intersecting an axis normal to the nozzle centerline and parallel to each said rudder pivot axis at the other end, thereby to obstruct the passage of liquid through said one inclined nozzle opening and divert liquid through the other inclined nozzle opening remaining open on the other side of said nozzle there to act upon the other deflector rudder to enhance vessel steering.

3,961,592
QUICK RELEASE

Jean-Louis Corgnet, Boulogne, France, assignor to Compagnie Francaise des Petroles, Paris, France

Filed Apr. 4, 1974, Ser. No. 458,002
Claims priority, application France, Apr. 10, 1973, 73.12915
Int. Cl.² B63B 21/24
U.S. Cl. 114—206 R 15 Claims



12. A method of quick release anchoring for a vessel, platform, or rig wherein an anchor having defined therein first and second chambers is connected by coupling means to an anchor line under tension, said coupling means comprising a tension transmitter subject to the tension of said anchor line

and having at least one cavity defined therein; said method comprising the steps of:

transmitting a signal to a control signal receiver disposed in said chamber and operable for producing an output signal in response thereto;

conducting said output signal to a detonator disposed in said second chamber and operable to explode in response thereto; and

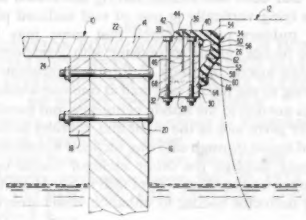
disposing an explosive charge in said cavity so that it will be exploded by the shock wave produced by said detonator, whereby said anchor is disconnected from said anchor line.

3,961,593

DOCK FENDER ASSEMBLY

Joseph E. Matthews, 4017 N. Witchduck, Virginia Beach, Va. 23455

Filed May 30, 1975, Ser. No. 582,138
Int. Cl.² B63B *59/02*
U.S. Cl. 114—219 **1 Claim**



1. The combination, with a dock having an overhanging deck, said deck including a top, a bottom, and a side edge, of a dock fender assembly, comprising:

an elongated strip, having an outer side face, affixed to the bottom of the deck with said outer side face vertically aligned with the side edge of the deck;

a dock fender formed of resilient material;

the dock fender including a horizontal upper wall with inner and outer surfaces secured to the deck and with the inner surface contacting the top of the deck;

a rigidifying rod embedded in the upper wall and extending longitudinally therethrough;

means extending through the horizontal upper wall outboard of the rigidifying rod and into the deck;

the dock fender including a vertical lip outward of the upper wall, said lip bearing against the side edge of the dock;

the dock fender further including a main fender portion having an outwardly extending arm, a vertical bumper, an inwardly angled leg, and a connector base;

the main fender portion and the lip defining an open chamber which permits flexation of the main fender portion, said chamber extending from a position behind the lip whereat it is semi-circular to the connector base and is of decreased depth as it approaches the base;

a rigidifying rod embedded in the connector base and extending longitudinally therethrough; and

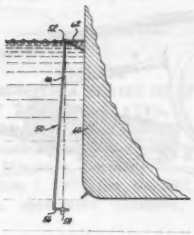
means extending through the connector base below the rod into said elongated strip to affix the base to the strip.

3,961,594

REMOVAL OF SEA GROWTH FROM SUBMERGED SHIP HULL SURFACES

Bradley E. Meyers, Seattle, Wash., assignor to Sea Mesh Corporation, Bellevue, Wash.

Filed Jan. 4, 1974, Ser. No. 430,606
Int. Cl.² B63B *59/00*; B60S *1/00*
U.S. Cl. 114—222 **17 Claims**



1. The method of removing sea growth from submerged ship hull surfaces, comprising the steps of;

a. forming a network from an explosive cord;

b. positioning the network substantially parallel and in untouching predetermined spaced relationship from the surface, and,

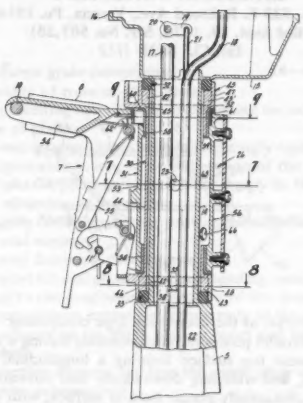
c. initiating the cord.

3,961,595

STEERING APPARATUS FOR SMALL OUTBOARD MOTORS

James A. Meyer, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Aug. 29, 1974, Ser. No. 501,486
Int. Cl.² B63H *21/26*
U.S. Cl. 115—18 R **18 Claims**



16. In an outboard motor having a support housing with a powerhead secured to the upper end thereof and a propeller unit secured to the lower end thereof and mounted within a swivel bracket mounting assembly, said powerhead including an internal combustion engine exhausting gas downwardly through said housing, an improved mounting apparatus comprising a tubular section encircling said support housing, coupling members located between said support housing and said tubular section and defining an exhaust expansion chamber, said support housing having an exhaust opening to said expan-

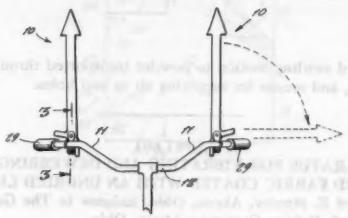
sion chamber, and a tuned passageway means secured to the tubular section and having an inlet connected to said expansion chamber.

3,961,596

BICYCLE DIRECTIONAL SIGNAL

Louise Schiavone, 476 Richmond Terrace, Apt. 5A, Staten Island, N.Y. 10301

Filed Dec. 9, 1974, Ser. No. 530,802
Int. Cl.² B60Q 1/36
U.S. Cl. 116—53 1 Claim



1. In a bicycle directional signal, the combination of a flat lever and base, said base having means for securement upon an arm of a bicycle handle bar, and means being provided for pivoting said lever between a horizontal and vertical position; said lever being of arrow-shape having an arrow-head shaped on one end, an opposite end having a counterweight secured thereto, a pivot opening transversely through said lever near said counterweight, said opening receiving a pivot bolt of said base and about which said lever pivots; said base being comprised of a pair of generally U-shaped clips hooked together, a first of said clips supporting a second of said clips which carries said pivot bolt; said pivot bolt extending through an opening in each opposite end leg formed on said second clip, and said bolt also extending through openings formed in a pair of rubber friction washers one of which is positioned on each side of said lever, said bolt being fitted with a nut for adjusting a friction grasp of said lever by said washers, and opposite end legs formed on said first clip, each having an opening aligned together for receiving a mounting bolt after the said first clip is fitted around said bicycle handle bar arm, wherein said lever includes a sideward extension located between said arrowhead shaped end and said lever opening, said sideward extension being relatively close to said lever opening, said sideward extension and said counterweight each serving as a stop by abutting against said bicycle handle bar arm when said lever is pivoted between said horizontal and vertical positions respectively, and opposite sides of said lever having peripheral edges covered by a luminescent paint.

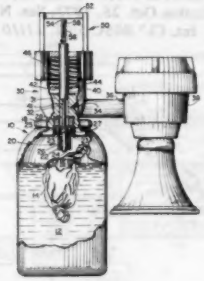
3,961,597

LIQUEFIED GAS ALARM DEVICE

William W. Lester, Wellesley, and Lawrence V. Mason, Marblehead, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed June 27, 1974, Ser. No. 483,840
Int. Cl.² B67D 05/10; G08B 17/00
U.S. Cl. 116—103 2 Claims

1. An alarm device comprising a pressure vessel, valve means at the outlet of said pressure vessel, gas-pressure-powered signal means, conduit means connecting said signal means through said valve means to said pressure vessel, a liquefied propellant gas in said pressure vessel for operating said signal means, means responsive to an external condition to open said valve means, whereby said signal means is caused to emit a signal, and a sealed plastic bag containing water as a heat reservoir in said pressure vessel to release heat during vaporization of said liquefied propellant gas, whereby to maintain rapid vaporization of said liquefied propellant gas for operating said signal means.

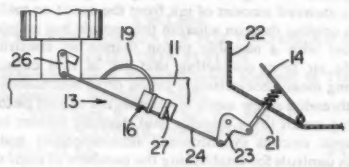


3,961,598

GAS SAVING TACTILE DEVICE

LaVerne M. Krieger, 7718 Julie Drive, Kalamazoo, Mich. 49002

Filed Dec. 6, 1974, Ser. No. 530,059
Int. Cl.² G01D 13/00
U.S. Cl. 116—114 AE 10 Claims



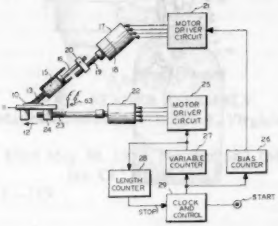
1. In a vehicle having an internal combustion engine, an intake manifold means associated with said engine for supplying a fuel-air mixture thereto, and operator engaging means disposed within the passenger compartment of the vehicle and adapted to be engaged by the operator of the vehicle, the improvement comprising:

a tactile-type warning system coacting with said engine for warning the operator when the engine is being operated in an uneconomical manner by imposing a tactile vibration on the operator, said warning system including vibrator means for generating a tactile vibration when an uneconomical operational condition exists, vibration transmitting means connected between said vibrator means and said operator engaging means for transmitting said tactile vibration to said operator to signal said uneconomical operational condition, and activating means coacting between said manifold means and said vibrator means for activating said vibrator means whenever the vacuum in said intake manifold means is less than a predetermined magnitude.

3,961,599
APPARATUS FOR MAKING MINIATURE LAYER RESISTORS ON INSULATING CHIPS BY DIGITAL CONTROLS

John Paul Jones, Jr., Wayne, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 171,144, Aug. 12, 1971, abandoned.
This application Oct. 25, 1973, Ser. No. 409,589
Int. Cl.² B05C 5/02, 11/10
U.S. Cl. 118—6 9 Claims



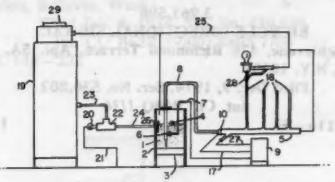
1. A system for producing miniaturized flat layer electronic components including resistors of the order and magnitude of a mil in thickness and of a few hundredths of an inch in width and length by coating a flat insulating chip with a paste-like ink material, comprising in combination, a chip, a hypodermic syringe-like capsule for holding and dispensing a supply of said ink having a dispensing spout with an opening therein approximately the width and thickness of the component to be placed on said chip, positioning means for supporting said chip adjacent said dispensing spout, said positioning means comprising a moveable table for supporting said chip, said table connected to a drive mechanism controlled by a stepping motor so that said table can be moved in relation to said spout for a precisely determined distance and at a precisely determined speed, and metering means for dispensing during said movement a metered amount of ink from the spout on said chip to form a coating thereon wherein the capsule has an ink supply chamber with a movable piston therein so constructed to exclude air from contacting said ink in said capsule, said metering means comprising a piston drive mechanism including a threaded screw assembly connected to said piston and a stepping motor drive therefor said stepping motors including electronic circuits synchronized simultaneously and having various controls for establishing the numbers of steps taken by each of the stepping motors thereby establishing the quantity of ink dispensed, the table movement and thus the length and thickness of the coating on the chip.

3,961,600
APPARATUS FOR COATING INCANDESCENT LAMP BULBS

Horace H. Homer, Arlington; Richard S. Doron, Winchester, both of Mass., and Donald J. Grolemund, Kersey, Pa., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Oct. 23, 1974, Ser. No. 517,353
Int. Cl.² B05C 7/02, 11/10
U.S. Cl. 118—7 7 Claims

1. Apparatus for coating incandescent lamp bulbs with powder comprising: a container having means for maintaining the powder in suspension; a constant level sensor means in said container for maintaining the suspended powder at a constant level; a coating manifold; a vortex nozzle; means for drawing suspended powder from said container through said vortex nozzle into said coating manifold; and a tube for carrying powder from said coating manifold to a lamp bulb coating station, wherein said vortex nozzle contains an axial bore connected to said drawing means and a plurality of holes opening inwardly into the bore in a direction toward said manifold and angular with respect to its axis so as to impart a

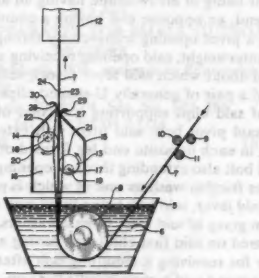


forward swirling motion to powder transported through said nozzle, and means for supplying air to said holes.

3,961,601
APPARATUS FOR VIBRATING AND DEWEBBING TIRE CORD FABRIC COATED WITH AN UNDRIED LIQUID

Edward E. Hunter, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 17, 1975, Ser. No. 596,703
Int. Cl.² B05C 11/08
U.S. Cl. 118—57 15 Claims



1. An apparatus for shaking fabric coated with an undried liquid, comprising in combination:

a. means for guiding a sheet of fabric along a desired pathway which is angularly disposed to the horizontal;

b. a pair of elongated cams disposed in spaced relation, the length of each cam being at least coextensive with the width of the fabric;

c. means for mounting the cams for rotation about parallel axes which are parallel to the desired pathway of the fabric and spaced apart both in horizontal and vertical directions;

d. means for positioning the cams such that their rotational axes are equally spaced in opposite directions from the desired pathway of the fabric; and

e. means fo synchronizing rotation of the cams such that

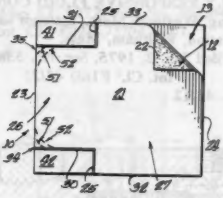
I. the outer surface farthest from the rotational axis of one of the cams and the outer surface closest to the rotational axis of the other of the cams, simultaneously contact the fabric and

II. the cams continuously contact the fabric as they alternately push the fabric in opposite directions from the desired pathway, thereby vibrating or shaking the fabric between the rotational axes of the cams.

3,961,602
BUTT COVERS

Robert E. Dresser, 173 Buena Vista Drive, Port Richey, Fla. 33568

Filed June 16, 1975, Ser. No. 587,370
Int. Cl.² B05C 17/06
U.S. Cl. 118—505 6 Claims



1. A butt cover intended for protecting a butt plate of a hinge member against paint and paint sprays, the butt plate being of a flat configuration having hinge pin cylindrical receiving segments affixed thereto and projecting outwardly therefrom, the butt cover member comprising, in combination:

a thin flat flexible body member having a face surface and a back surface;

a coating of pressure sensitive adhesive applied evenly completely over the back surface of the body member;

a protective backing sheet disposed in juxtaposition with the adhesive coating back surface of the body member to protect the adhesive coating while being readily peelable therefrom to expose the adhesive coating preparatory to use of the cover member;

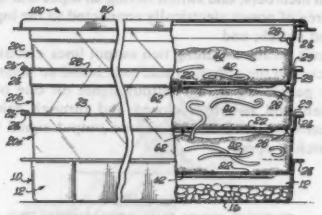
the body member having a general T-shaped configuration with the leg of the T defining a butt plate portion and with the arm of the T defining a hinge pin hole portion, the butt plate portion being of a general rectangular configuration having a flat vertical inner edge and opposed flat horizontal top and bottom edges with the front edge of the butt plate portion formed contiguously with a back edge of the hinge pin hole portion, inner corners defined on the butt plate portion between the inner edge and the adjacent most top and bottom edges, means defining the shape of the inner edges between a square corner configuration and an arcuate curved corner configuration, the hinge pin hole portion being of a rectangular configuration of a greater vertical height than the butt plate portion with its back edge extending outwardly of the side edges of the butt plate portion to define spaced apart back edge portions, a flat outer edge portion extending vertically parallel to the butt plate portion inner edge, and opposed parallel horizontal top and bottom edges extending parallel to and spaced outwardly from the butt plate portion top and bottom edges; and

the means defining the shape of the inner corner edges of the butt plate portion of the body member comprising a normally rectangular corner member, a series of generally concentric arcuate dashed score lines spaced inwardly of the body member from each of the inner corners and defining perforation lines for tearing off portions of the body member for selective adjustment of the corners to correspond to associated corners of a butt plate on which the cover member is to be detachably affixed.

3,961,603
HABITAT FOR EARTHWORM CULTIVATION

Ronald E. Gaddie, Sr., 1140 W. Philadelphia, Ontario, Calif. 91761

Filed July 31, 1975, Ser. No. 600,570
Int. Cl.² A01K 67/00
U.S. Cl. 119—15 6 Claims



1. A habitat for the raising of earthworms in a bedding matrix, comprising:

a plurality of stacked pans, each of said pans being provided with a flat bottom; perforations in that bottom, for the circulation of air, moisture and earthworms therethrough; peripheral sidewalls with an upwardly opening draft, defining spaces for the charging thereinto of said bedding; gusset means, projecting inwardly from said sidewalls into said spaces, for the support of a superior pan thereon; and with upwardly convex spacing buttons, in a substantially horizontal flange extending around the upper circumference of said sidewalls;

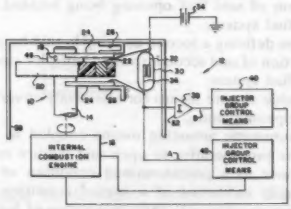
a humidity control pan with a water-impermeable base and peripheral walls, adapted to sealably receive the lowermost one of said plurality of stacked pans; and

a cover, overlapping the circumferential flange of the topmost one of said plurality of stacked pans, supported on the spacing buttons thereon.

3,961,604
MAGNETIC TRIGGER DEVICE FOR TWO GROUP FUEL INJECTION SYSTEM

Yoram Shimrony, Givat-Shmuel, Israel, assignor to The Bendix Corporation, Southfield, Mich.

Filed Sept. 9, 1974, Ser. No. 504,615
Int. Cl.² F02B 3/00; H01H 9/00
U.S. Cl. 123—32 EA 2 Claims



1. In a fuel injection system for an internal combustion engine a magnetic timing device for generating group timing signals to the injectors, said device comprising:

a rotatable shaft operatively coupled to the crankshaft of the engine;

a non-magnetic disc member connected to said shaft for rotating thereby;

a bar magnet having a cross-sectional area substantially less than said disc and located in said disc near the periphery

thereof, said magnet positioned so that its magnetic axis is parallel to said shaft;

a pair of spaced apart magnetizable ferrite members, each of said members having an arcuate length of 180° and positioned for allowing said magnet to pass along a path therebetween during a revolution of said disc;

a reed switch positioned to be magnetically actuated by said magnet during the time said magnet is moving between said members, said switch having an input and an output;

a source of power electrically connected to the input of said reed switch; and

a circuit means including two output lines electrically connected to the output of said switch and an inverter means for generating a first output signal on one output line when said switch is closed and through said inverter means for generating a second output signal when said switch is open.

3,961,605

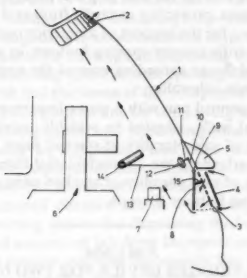
ENGINE COOLING ARRANGEMENT

Hermann Kaltner, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Continuation of Ser. No. 378,941, July 13, 1973, abandoned. This application Jan. 31, 1975, Ser. No. 546,072

Int. Cl.² F01P 7/02

U.S. Cl. 123—41.05 **10 Claims**



1. In combination with a vehicle having a primary cooling system for an engine, a fuel system cooling arrangement supplemental to and distinct from the primary cooling system of the engine comprising:

a. means defining a first opening in said housing, at least a portion of said first opening being located higher than said fuel system;

b. means defining a second opening in said housing, at least a portion of said second opening being located lower than said fuel system;

c. movable closure means for selectively covering said second opening; and

d. an automatic actuating means coupled to said closure means and operative to open said closure means only in response to a predetermined condition of the vehicle normally indicative of a heated condition within said housing conducive to the vaporization of fuel, thereby to permit convection cooling of the fuel system with air being drawn in through said second opening and flowing out through said first opening.

10. A method of providing cooling for a fuel system of a vehicular engine having a primary cooling system to prevent fuel vaporization, which cooling is supplemental to and distinct from the engine cooling and which fuel system is located within a housing, said method comprising the steps of:

a. providing a first opening in the housing, at least a portion of said first opening being opening being located higher than the fuel system;

b. providing a second opening in the housing, at least a portion of said second opening being located lower than the fuel system;

c. sensing a heated condition capable of inducing vaporization of fuel in the fuel system; and

d. opening said second opening in the housing only if said heated condition is present, whereby fuel vaporization will be prevented by a cooling convection flow of air induced around the fuel system.

3,961,606

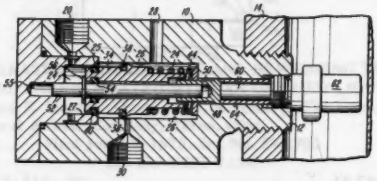
THERMALLY RESPONSIVE FLUID CONTROL VALVE

Backman Wong, Wayland, Mass., assignor to Standard-Thomson Corporation, Waltham, Mass.

Filed Jan. 2, 1975, Ser. No. 538,186

Int. Cl.² F16D 43/25

U.S. Cl. 123—41.12 **6 Claims**



1. Valve apparatus for control of a fluid operable clutch in response to temperature conditions within a coolant system of an internal combustion engine in which the clutch joins a fan to a drive member and in which the clutch is actuated for operation of the fan when fluid pressure of a suitable value is absent from the clutch and in which the clutch is disengaged for operation of the fan when fluid pressure of a suitable value is applied to the clutch, comprising:

a housing, the housing having an inlet passage, an outlet passage, and a vent passage, the housing also having a main internal passage which is in communication with the other passages, the main internal passage having wall surfaces forming an annular valve seat between the inlet passage and the outlet passage,

a movable valve member within the main internal passage,

a first annular elastomeric sealing member carried by the movable valve member in engagement with a wall surface of the main internal passage,

a second annular elastomeric sealing member carried by the movable valve member and in engagement with a wall surface of the main internal passage,

the movable valve member being movable within the main internal passage to position the first annular elastomeric sealing member in engagement with the annular valve seat to close communication between the inlet passage and the outlet passage, the movable valve member being movable within the main internal passage to position the second annular elastomeric sealing member between the vent passage and the outlet passage, the movable valve member being movable within the main internal passage to position the second annular elastomeric sealing member between the inlet passage and the outlet passage, the second annular elastomeric sealing member being positioned between the inlet passage and the outlet passage when the first annular elastomeric member is in engagement with the annular valve seat,

resilient means within the main internal passage and urging movement of the movable valve member toward the annular valve seat for engagement of the first annular elastomeric sealing member within the annular valve seat,

a thermally responsive device having a portion operable to move the movable valve member toward the valve seat,

the thermally responsive actuator member having a temperature sensing portion exterior of the housing and position-

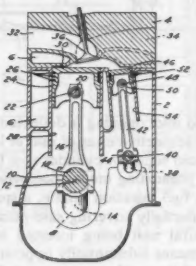
able within a coolant system of an internal combustion engine, the inlet passage of the housing being adapted to be in communication with a source of air having a suitable pressure, the outlet passage of the housing being adapted to be in communication with a clutch of an air operable fan which is operable to cool a radiator of a coolant system of an internal combustion engine.

3,961,607

INTERNAL COMBUSTION ENGINE

John Henry Brems, 32867 White Oaks Trail, Birmingham, Mich. 48010

Filed May 12, 1972, Ser. No. 252,840
Int. Cl.² F02B *75/04, 25/12*
U.S. Cl. 123—78 R **12 Claims**



1. An improvement in an internal combustion engine of the reciprocating piston type which comprises:
   a. means forming a primary cylinder cavity,
   b. means forming a secondary cylindrical cavity,
   c. primary and secondary pistons movable in each said respective cavities,
   d. means forming a passage between said primary and secondary cylindrical cavities to permit movement of gases independently of the position of said pistons,
   e. a primary crankshaft associated with said piston in said primary cavity,
   f. a secondary crankshaft associated with said piston in said secondary cavity,
   g. means interconnecting said crankshafts to cause said secondary crankshaft to rotate in a variable defined relationship to the rotation of said primary crankshaft, said interconnecting means including means to drive said secondary crankshaft at a higher angular velocity than said primary crankshaft and to rotate an average integral number of half revolutions for each revolution of said primary crankshaft.

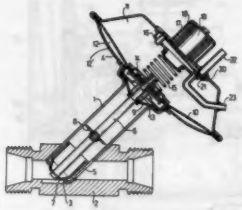
3,961,608

VALVE FOR CONTROLLING THE FLOW OF COMBUSTION GASES IN A COMBUSTION ENGINE

Wilhelm Hertfelder, Steinenbronn, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed June 5, 1973, Ser. No. 367,203
Claims priority, application Germany, Nov. 11, 1972, 2255297
Int. Cl.² F02M *25/06*
U.S. Cl. 123—119 A **10 Claims**

1. A valve for controlling flow of combustion gases of an internal combustion engine, said valve comprising a tubular member communicating at opposite ends with an intake manifold and a gas outlet of the engine respectively; a housing having an interior space; valve means having a slidable valve member movable across said tubular member between said opposite ends thereof between an open position permitting flow of combustion gases from the gas outlet into the manifold and a closed position preventing such flow, said valve means including a valve rod extending with one end into said interior space; at least one flexible diaphragm subdividing said interior space into two chambers and being fixed to said one end of said valve rod, one of said chambers communicating with the atmosphere; a first conduit communicating at one end with the other chamber and at the other end with the manifold; a second conduit communicating at one end, spaced from and substantially aligned with said one end of said first conduit, with said other chamber, and at the other end with the atmosphere; and an electromagnetic valve for alternatively closing said one end of one of said conduits while opening said one end of the other of said conduits and vice versa, said electromagnetic valve being arranged in said other chamber, coaxially with said valve rod and having an armature in form of a leaf spring fixed at one end to said housing and having a free end portion located between said one end of said first conduit at said one end of said second conduit, and sealing material provided on said free end portion for sealingly engaging the one end of the respective conduit.

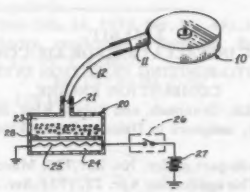


3,961,609

PURE OXYGEN SUPPLY TO AN INTERNAL COMBUSTION ENGINE

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Filed July 12, 1973, Ser. No. 378,437
Int. Cl.² F02M *25/06*
U.S. Cl. 123—119 E **5 Claims**



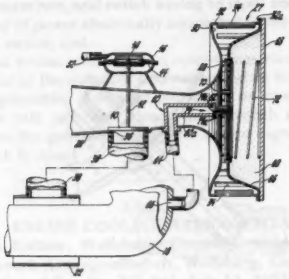
1. A method for decreasing hydrocarbons and oxides of nitrogen emanating from an exhaust system of an internal combustion engine by supplying substantially pure oxygen to said engine, the improvement comprising the steps of:
   storing a chemical source of oxygen which is at least one compound selected from the group consisting essentially of potassium perruthenate, potassium persulfate, calcium peroxide and potassium pyrophosphate in a chamber;
   heating said at least one compound to a temperature within the range of about 100° to 360° farenheit so as to release oxygen therefrom; and
   passing the released oxygen to an intake of said engine.

3,961,610

EXHAUST GAS RECIRCULATION CONTROL SYSTEM

Kelly W. Thurston, Okemos, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 29, 1974, Ser. No. 518,820
Int. Cl.[2] F02M 25/06
U.S. Cl. 123—119 A 7 Claims



1. An internal combustion engine comprising an induction passage for air flow to the engine, an exhaust passage for exhaust flow from the engine, said induction passage including a throttle controlled carburetor, an air cleaner upstream of said carburetor and a snorkel having an outlet at one end to said air cleaner and a variable area air inlet means at its opposite end open to ambient air, said variable area air inlet means including a fixed first wall and a differential pressure responsive valve means including a valve member movable relative to said first wall to define a variable area inlet for ambient air flow into said snorkel, said differential pressure responsive valve means including servo means operative as a function of air pressure in said snorkel immediately downstream of said variable area air inlet means, an exhaust gas passage means extending from said exhaust passage to said snorkel, said exhaust gas passage means including an outlet orifice in said snorkel opening toward and positioned closely adjacent to said variable area air inlet means and, an exhaust gas recirculation control valve fixed to said valve means for movement therewith and positioned in axial alignment with said outlet orifice for movement relative to said outlet orifice to control the exhaust gas recirculation flow through said outlet orifice into said snorkel.

3,961,611

PREHEATING INSTALLATION FOR AIR-COMPRESSING AND AUTO-IGNITING INJECTION INTERNAL COMBUSTION ENGINE

Gerhard Fränkle, Grunbach, and Roland Klak, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

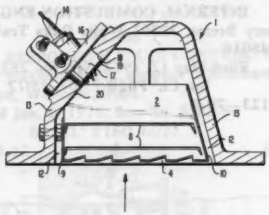
Continuation-in-part of Ser. No. 237,735, March 24, 1972, abandoned. This application Apr. 22, 1974, Ser. No. 463,133
Claims priority, application Germany, Mar. 25, 1971, 2114473
Int. Cl.[2] F02M 31/00
U.S. Cl. 123—122 D 25 Claims

1. An installation for preheating combustion air in a combustion engine using poorly ignitable fuels comprising

intake air means mounted between separate cylinder row banks of an engine for distributing combustion air to said separate cylinder row banks of the engine, said intake air means having an inlet opening to pass combustion air into said intake air means, and said intake air means having at least two arms with an opening at the ends of each of said arms connected to said separate cylinder row banks of said engine, said intake air opening being arranged between said at least two arms, and said intake opening being centrally positioned between said separate cylinder row blanks,

preheating means mounted on said intake air means substantially opposite said inlet air opening for producing a heating flame to preheat said combustion air, and

protective means for shielding said heating flame, said protective means arranged in said intake air means such that said combustion air entering into said intake air means



through said inlet opening is deflected by said protection means into respective ones of said at least two arms connected to said separate cylinder row banks,

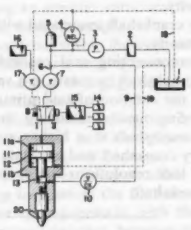
wherein said preheating means comprises a structural unit including a fuel injection nozzle, a spark plug and cover means for partially covering said nozzle and spark plug, said structural unit being inserted into a wall of said intake air means substantially opposite said central inlet opening such that said cover means is flush with said wall.

3,961,612

FUEL INJECTION DEVICE FOR DIESEL ENGINES

Kazuo Okamoto, Saitama, and Nobuhiro Kaibara, Higashi-Matsuyama, both of Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 22, 1974, Ser. No. 499,590
Int. Cl.[2] F02D 1/04; F02M 39/00
U.S. Cl. 123—139 E 7 Claims



1. A fuel injection device for diesel engines comprising a body including a large diameter portion and a small diameter portion of a servopiston to define a piston chamber, a counter piston chamber and a plunger chamber, an electromagnetic valve, a fuel supply pump having a discharge portion, a fuel tank, a check valve preventing fuel from flowing out of said plunger chamber, said servopiston chamber being changeably connected by the electromagnetic valve to the fuel tank and to receive pressure from said fuel supply pump, said counter piston chamber being connected to the fuel tank and said plunger chamber being connected to said piston chamber through the check valve, a variable throttle member arranged between the electromagnetic valve and the discharges portion of the fuel supply pump, said variable throttle member varying in opening in proportion to the displacement of an accelerator, said variable throttle member controlling the stroke speed of the servopiston in the fuel injection direction when fuel is

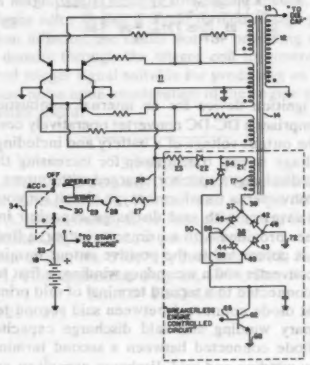
supplied under pressure, and a throttle means arranged in a conduit connected to said piston chamber, the stroke speed of the servopiston in the fuel suction direction being controlled by the throttle means.

3,961,613

CONTROLLED SPARK-DURATION IGNITION SYSTEM

Robert E. Canup, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,060
Int. Cl.² F02P 1/00
U.S. Cl. 123—148 E 11 Claims



1. A controlled spark-duration ignition system for an internal combustion engine having a crank shaft, said system comprising in combination

a high-frequency continuous-wave oscillator including first circuit means for connecting a source of D.C. power thereto and a transformer having a high-voltage output winding,

second circuit means for connecting said transformer output winding to a sparking circuit,

an oscillator control winding located on said transformer for starting and stopping oscillation of said oscillator,

third circuit means for applying a D.C. bias current to said oscillator control winding when said oscillator is not oscillating, and

means controlled by said engine crank angle for cutting off said D.C. bias at the beginning of each spark-duration interval.

3,961,614

LUBRICATING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Jean Rameau, Sannois, France, assignor to Regie Nationale des Usines Renault and Societe des Automobiles Peugeot, both of Paris, France

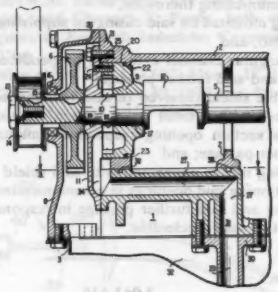
Filed Sept. 25, 1974, Ser. No. 509,255
Claims priority, application France, Oct. 11, 1973, 73.36358
Int. Cl.² F02F 7/00
U.S. Cl. 123—195 A 7 Claims

1. An arrangement for the lubrication of an internal combustion engine having a crankcase within which are located the rotary engine shafts, one of which is the crankshaft, and the bearings for said shafts, the cylinder block of said engine being disposed within the upper portion of said crankcase while the oil pan is disposed within the lower portion of said crankcase, said arrangement comprising:

a rotary type oil pump having a body within which is enclosed at least one rotor mounted directly upon an extension of one of said rotary shafts of said engine;

a lubricating circuit including an intake duct fluidically connected to said pump and a supply duct fluidically connected to lubrication channels of said engine bearings;

said pump body being radially centered and removably disposed within said crankcase by means of peripheral engagement with seating means provided within one of the end walls of said engine crankcase and serving as an



end bearing for said one of said rotary shafts of said engine; and

a cover secured to said oil pump body in an oil-tight manner and which defines, together with said pump body, a space within which said pump rotor is enclosed;

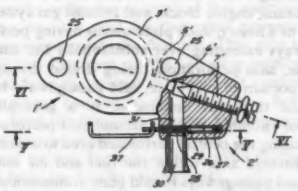
said cover also being directly removably secured to said engine crankcase, and preferably to the front face of said one of the end walls thereof, in such a way as to maintain said pump body pressed against a shoulder of said pump seating means yet permitting said pump body to be removed from said crankcase seating means and said crankcase.

3,961,615

DETOXICATION DEVICE FOR EXHAUST GASES OF INTERNAL-COMBUSTION ENGINES

Stjepan Poslek, and Vladimir Pericki, both of Vinagorska 19, Zagreb, Yugoslavia

Filed Feb. 14, 1974, Ser. No. 442,344
Claims priority, application Yugoslavia, Feb. 20, 1973, 425/73; Aug. 17, 1973, 2240/73
Int. Cl.² F02M 23/02
U.S. Cl. 123—119 DB 1 Claim



1. The combination with an internal-combustion engine having a carburetor provided with a butterfly valve controlled by an accelerator pedal and feeding fuel-air mixture to an intake manifold of the engine, of a detoxification device interposed between said carburetor and said intake manifold, said detoxification device comprising:

a generally flat casing formed with a passage communicating between said carburetor and said intake manifold and formed on one side with an intake orifice;

a ring received in said casing on the opposite side of said passage and defining therein a ring-shaped diffusor channel outwardly of said orifice and an annular slot extending around the circumference of said orifice, and opening from said channel inwardly at the end of said orifice, said ring being formed with an outlet orifice widening away from said slot, said casing being formed with

a bore communicating with said channel at one end of the bore,

another passage extending annularly from said bore and communicating therewith,

a fitting mounted on said casing for supplying secondary air thereto, and

a rectangular channel extending perpendicular to said fitting and said further passage;

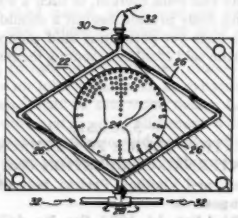
a slidable shield received in said rectangular channel and formed with a small cross section opening and a large cross section opening respectively alignable with said further passage; and

operating means connected with said shield for selectively positioning said openings in communication between said fitting and said further passage in response to displacement of said accelerator.

3,961,616
FUEL VAPORIZER FOR ENGINES

George A. Brown, 310 S. Highway 288, Clute, Tex. 77531

Filed Dec. 31, 1974, Ser. No. 537,661
Int. Cl.² F02M *31/00*
U.S. Cl. 123—122 A 4 Claims

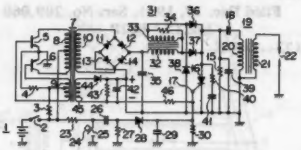


1. In a fuel vaporizing device for an internal combustion engine having a carburetor with fuel and air mixture feed and supply means, engine block, and exhaust gas system, the combination of a heavy, thick plate means having perforations and passageways extending over substantially the central area of said plate, said perforations being drilled through a central circular portion of said plate, said passageways being formed within the thickness dimension, in a generally diamond-shaped, or rhombic, pattern around said perforations, gasket means sealing the central perforated area to means connecting said perforated area within the fuel and air mixture supply means, said passageways in said plate communicating with the periphery of the plate at opposite sides thereof with conduit means communicating the passageways at one side of the plate with the exhaust manifold, and conduit means communicating the passageways at the opposite side of the plate with the carburetor whereby reduced pressure in the carburetor will induce flow of exhaust gases through the passageways in the plate to utlize the waste heat of the exhaust gases to vaporize the fuel enroute to the engine.

3,961,617
IGNITION DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Yasuro Satake, Chino, Japan, assignor to Suwa Electric Wire Co., Ltd., Suwa, Japan

Filed Nov. 27, 1974, Ser. No. 527,529
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 OC 5 Claims

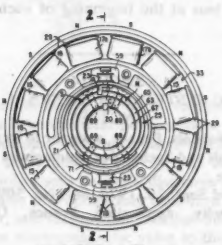


1. An ignition device for an internal combustion engine which comprises a DC-DC converter operatively connected to receive the output voltage of a battery and including an oscillation voltage stepup transformer for increasing the battery voltage; a discharge capacitor charged with output from said DC-DC converter; a transformer type circuit for coupling said DC-DC converter with said discharge capacitor including a transformer provided with a primary winding, a first terminal of which is connected to the positive output terminal of said DC-DC converter and a secondary winding, a first terminal of which is connected to a second terminal of said primary winding, a first diode connected between said second terminal of said primary winding and said discharge capacitor, and a second diode connected between a second terminal of said secondary winding and said discharge capacitor; an SCR for discharging electric energy stored in said discharge capacitor through the primary winding of an ignition coil; an ignition circuit for triggering said SCR responsive to the operation of a contact breaker; and biasing means for impressing reversed bias voltage across the gate and cathode of said SCR.

3,961,618
SMALL ENGINE IGNITION SYSTEM WITH SPARK ADVANCE

Thomas Edwin Swift, West Springfield, Mass., assignor to Eltra Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 322,445, Jan. 10, 1973, abandoned. This application Nov. 25, 1974, Ser. No. 527,103
Int. Cl.² F02P *5/04*, *1/00*
U.S. Cl. 123—148 CC 5 Claims



1. An ignition system, comprising:

ignition means operable in response to trigger signals for producing corresponding ignition pulses to operate an internal combustion engine,

trigger means for supplying trigger signals to said ignition means in timed relation with a movement of the piston of the engine,

said trigger means including a trigger coil operably associated with the piston for supplying trigger signals to said ignition means and a magnetic trigger rotor rotatable about an axis past said trigger coil in synchronism with the movement of the piston for generating a trigger signal in said trigger coil,

said trigger rotor having a peripheral portion constructed of magnetically conductive material with a substantially radial slot formed therein to provide an air gap rotatable past said trigger coil in close proximity and having magnetic means providing magnetic poles of opposite polarity on opposite sides of the radial slot in said peripheral portion to establish across the air gap a magnetic field with flux reversal for generating a trigger signal of maximum magnitude at relative low engine speeds, and

said trigger rotor having a notch formed in said peripheral portion adjacent the radial slot for providing a reduced flux density through the trigger coil to generate an advanced trigger signal suitable for producing an advanced ignition pulse upon acceleration of the engine to a predetermined speed.

3,961,619

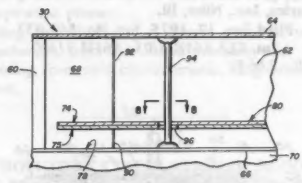
FLAT PLATE SOLAR COLLECTOR MODULE

James M. Estes; Eliot E. Kerlin, both of Fort Worth, and Harold A. Blum, Dallas, all of Tex., assignors to Solarsystems Incorporated, Tyler, Tex., a part interest

Division of Ser. No. 373,795, June 26, 1973, Pat. No. 3,916,871. This application July 15, 1974, Ser. No. 488,791

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—271 **12 Claims**



1. In a solar collector for operation within an operating temperature range, the collector having in combination a housing defining a sealed evacuated chamber with a planar-shaped solar radiation transmitting portion on at least one side thereof, an absorber mounted in the chamber for receiving incident radiant energy, an energy absorption surface means on the absorber, the absorber extending substantially across the cross-section of the chamber in a plane parallel to the transmitting portion of the housing, the housing and absorber being constructed from materials with coefficients of thermal expansion which create relative movement between points on the absorber and the housing due to changes of the temperature of the collector within the temperature operating range, the improvement which comprises means for reducing stresses within the collector and increasing thermal efficiency of the collector comprising in combination:

a plurality of compression members mounted in the housing and extending across the chamber transverse to the absorber and contacting the transmitting portion of the housing at points spaced away from the edges of the absorber;

a plurality of clearance openings extending through the absorber, each opening defined by a continuous edge on the absorber, each of said compression members positioned in the chamber to extend through one of said openings, said edges being spaced away from said compression members a sufficient distance to prevent contact between said edges and said compression members during relative movement between said compression members and the absorber caused by thermal expansion and contraction of the collector during temperature changes in the collector within the operating temperature range; and

a plurality of support pin means extending between the absorber and the housing having a sufficient columnar strength to support the absorber in a position spaced away from the housing and a bending strength to reduce the transfer of thermally induced stress between the housing and the absorber.

3,961,620

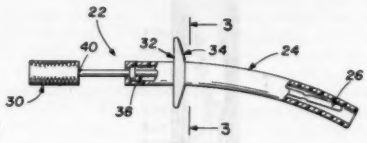
CERVICAL SAMPLING APPARATUS

Colin B. Schack, and Clarence E. Purdy, both of Omaha, Nebr., assignors to Research Industries Corporation, Salt Lake City, Utah

Continuation of Ser. No. 123,697, March 12, 1971, abandoned. This application Mar. 30, 1973, Ser. No. 346,698

Int. Cl.[2] A61B *10/00*

U.S. Cl. 128—2 B **4 Claims**



1. A cervical sampling apparatus comprising:

an elongate, substantially rigid hollow tube having a first, relatively long end which is curved about an axis extending perpendicularly to the tube and having a second relatively short end which is substantially straight;

an annular shield fixed to the outside of the tube at the intersection of the first and second ends for locating the first end in the vaginal canal adjacent the cervix;

a substantially rigid, paddle-shaped sampling member normally enclosed by the first end of the tube,

said sampling member comprising opposed, flat, parallel major surfaces, opposed parallel side edges, and a semicircular end edge extending between the side edges whereby the sampling member is adapted to collect a cervical test specimen and thereafter for cytological analysis of the collected cervical test specimen with the cervical test specimen intact on the sampling member;

an elongate flexible shaft fixed to the sampling member and extending therefrom through the tube and out the second end thereof for selectively reciprocating the sampling member out of the first end of the tube to a sampling position in the vaginal canal adjacent the cervix, for rotating the sampling member in the sampling position and thereby collecting a cervical test specimen on the sampling member, and for thereafter reciprocating the sampling member into the first end of the tube so that the cervical test specimen on the sampling member can be removed from the vaginal canal without contamination;

a handle means secured to the end of the flexible shaft remote from the sampling member for engagement with the second end of the tube;

an enlarged portion formed on the flexible shaft at a point spaced from the handle means; and

a reduced diameter portion at the second end of the tube providing means for cooperation with the enlarged portion of the flexible shaft to limit retraction of the sampling member into the tube;

said sampling member, said flexible shaft and said enlarged portion on the flexible shaft having an overall length less than the distance from the reduced diameter portion to said first end of the tube so that the sampling member is fully enclosed by the tube when the enlarged portion on

the flexible shaft is in engagement with the reduced diameter portion of the tube;

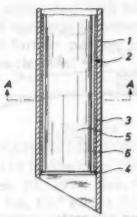
said enlarged portion being positioned on the flexible shaft at a point spaced apart from the handle means by a distance at least as great as the overall length of the sampling member so that the sampling member is fully extended to the sampling portion whenever the handle means is in engagement with the reduced diameter portion of the tube.

3,961,621

SURGICAL TOOL FOR TAKING BIOLOGICAL SAMPLES

Allan Northeved, Bagsvaerd, Denmark, assignor to Akademiet for de tekniske Videnskaber, Svejsecentralen, Glostrup, Denmark

Filed Jan. 24, 1975, Ser. No. 543,854
Claims priority, application Denmark, Feb. 6, 1974, 654/74
Int. Cl.² A61B *10/00*
U.S. Cl. 128—2 B **2 Claims**



1. A surgical instrument for taking biological samples from an interior surface of living animals including human beings, the instrument comprising an elongate tubular needle with an elongate tubular stiletto snugly and slidably disposed therein, said tubular stiletto having a sharpened annular distal end and having disposed therein means for guiding light from an external light source longitudinally through the stiletto by said sharpened end to said interior surface, means for guiding a reflected image from said interior surface longitudinally back through the stiletto from said sharpened end, and fine air ducts longitudinally extending through the stiletto to said sharpened end for applying a partial vacuum to cause said stiletto, when said sharpened end is adjacant said interior surface, to slide forward through the needle into abutment with said interior surface to cut out a biological sample and to cause said sample to adhere to said distal end of said stiletto.

3,961,622

ASPIRATOR METHOD

Donald W. Edwards, 821 Peoria Ave., Dixon, Ill. 61021

Division of Ser. No. 477,847, June 10, 1974, Pat. No. 3,920,001, which is a continuation-in-part of Ser. No. 58,049, July 24, 1970, abandoned. This application Sept. 9, 1975, Ser. No. 611,613
Int. Cl.² A61B *5/14*
U.S. Cl. 128—2 F **2 Claims**

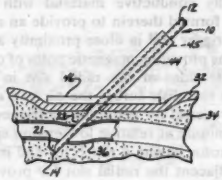
1. A method of taking a blood sample from an infant utilizing a cannula having a penetrating point at its distal end and an elongate lateral opening through the cannula wall on the side opposite the penetrating point and intersecting the end opening, comprising the steps of:

providing a sleeve having a length greater than the length of the lateral opening and an outwardly-extending flat base at the end adjacent the penetrating point;

slidably mounting the sleeve on the cannula for movement between a first position where the penetrating point is inside the sleeve and the lateral opening is covered by the sleeve, and a position closer to the hub;

sealing the sleeve against the cannula to provide an air-tight cover extending over the lateral opening;

sealing the base against an infant's skin at a location above the femoral vein and maintaining the sealing against the skin throughout the sebsequent steps;



inserting the cannula into the infant's leg and through the femoral vein until the penetrating point is adjacent the femur, thereby sliding the cannula relative to the sleeve;

withdrawing the cannula until the lateral opening communicates with the femoral vein;

applying a slight vacuum on the cannula to withdraw blood therethrough; and

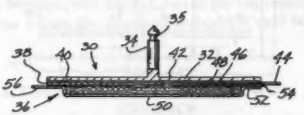
thereafter withdrawing the cannula from the infant.

3,961,623

METHOD OF USING A DISPOSABLE ELECTRODE PAD

Dean L. Milani, Highland Park, and Richard G. Kerwin, Prospect Heights, both of Ill., assignors to Medical Research Laboratories, Inc., Niles, Ill.

Filed Jan. 17, 1975, Ser. No. 542,033
Int. Cl.² A61B *5/05*; A61H *31/00*
U.S. Cl. 128—2.06 E **1 Claim**



1. The method of using a monitoring and defibrillating electrode having a disposable electrode pad thereon impregnated with an electrically conductive gel and covered with a conductive metallic foil which comprises pressing said foil against the skin of a patient's chest, monitoring the heartbeat of such patient through the electrode and the foil, and, in the event of detecting fibrillating of the heart of said patient, at least partially removing said foil and directly contacting the skin of said patient's chest with said electrode pad containing the electrically conductive gel, applying a defibrillating electrical charge to the heart of said patient through the electrode and the electrically conductive gel, and thereafter discarding said disposable electrode pad and substituting a new one on said electrode.

3,961,624

METHOD OF DETERMINING LUNG PRESSURE OF A PATIENT USING A POSITIVE PRESSURE BREATHING SYSTEM

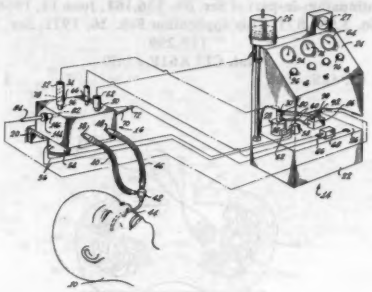
James Weigl, Santa Monica, Calif., assignor to Puritan-Bennett Corporation, Los Angeles, Calif.

Division of Ser. No. 313,978, Dec. 11, 1972, Pat. No. 3,871,371. This application Aug. 9, 1974, Ser. No. 496,278
Int. Cl.² A61B *5/08*
U.S. Cl. 128—2.08 **4 Claims**

1. A method of determining lung pressure during the breathing cycle of a patient undergoing positive pressure

breathing therapy by means of a respiration system, comprising the steps of:

sensing pressure at a location in the positive pressure respiration system having a low volume spatial separation, within the fluid communication path between the system and the lungs, from the patient's lungs;



controlling the respiration system to provide a breathing cycle having an inspiration phase, followed by a plateau phase during which expiration is prevented and the sensed pressure falls to the maximum lung pressure, and an expiration phase;

generating and displaying a system pressure versus time characteristic from the sensed pressure; and

determining from said characteristic, lung pressure in the patient.

3,961,625

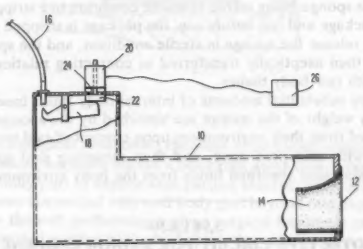
PROMOTING CIRCULATION OF BLOOD

Richard S. Dillon, 150 Mill Creek Road, Ardmore, Pa. 19003

Continuation of Ser. No. 485,077, July 2, 1974, abandoned. This application June 9, 1975, Ser. No. 584,747

Int. Cl.² A61H *1/00*

U.S. Cl. 128—40 **4 Claims**



1. Method of promoting circulation of blood through a leg which comprises: subjecting substantially the entire portion of the leg from thigh to foot to external pressure of compressed gas on the leg to improve circulation of blood through the arteries and veins in said portion; and periodically suddenly reducing the external pressure upon the arrival of the arterial pulse at said portion of the leg.

3,961,626

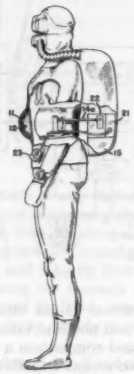
HYPERBARIC AND UNDERWATER EXTRATHORASIC ASSISTED BREATHING METHOD AND APPARATUS

John R. Houchen, 9175 Southern Road, La Mesa, Calif. 92041, and Irving Rehman, 5153 Tampa Ave., Tarzana, Calif. 91356

Filed Apr. 18, 1975, Ser. No. 569,524

Int. Cl.² A62B *7/00*

U.S. Cl. 128—145 R **48 Claims**



1. In an underwater breathing system adapted to be carried by a diver including means for delivering a dense gas mixture from said underwater breathing system to the diver, the improvement comprising:

means for assisting the breathing of said dense gas mixture said assisting means including means for fitting over the upper abdomen and lower rib cage;

means positioned in the dense gas mixture flow of the diver's underwater breathing system for sensing normal inhalation and exhalation to provide representative signals thereof;

means for fluidly coupling the fitting means to a source of fluid; and

means responsive to said signals generated by said sensing means for pumping said source of fluid into the fitting means to create a positive pressure therein when said sensing means transmits an exhalation signal representative of normal exhalation and for pumping fluid out of the fitting means to create a negative pressure therein when the sensing means transmits an inhalation signal representative of normal inhalation thereby aiding in the breathing of the dense gas mixture.

3,961,627

AUTOMATIC REGULATION OF RESPIRATORS

Heini Ernst, Witterswil, and Albert Guenin, Therwil, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sept. 3, 1974, Ser. No. 502,846

Claims priority, application Switzerland, Sept. 7, 1973, 12896/73

Int. Cl.² A61M *16/00*

U.S. Cl. 128—145.8 **24 Claims**

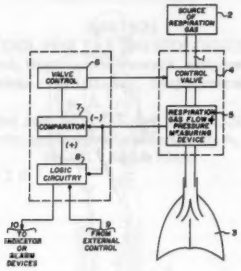
1. Regulation of the flow and pressure of the respiration gas in a respirator during the respiration cycle in which the actual flow and pressure of the respiration gas are measured via a measuring device arranged proximate the patient connection and the measured values thereof are converted into electrical signals and in which the flow and pressure of the respiration gas are controlled during the inspiration and expiration portions of the respiration cycle via valve means arranged be-

tween the respiration gas source and the measuring device, comprising:

measuring the actual flow of respiration gas proximate the patient;

measuring the actual pressure of respiration gas proximate the patient,

calculating nominal values of flow and pressure from preselected fixed values and said actual values;



comparing the actual values measured for the flow and pressure with said nominal values; and

obtaining from said comparison a control signal for modulating the valve means and thereby regulating the flow and pressure of the respiration gas wherein the inspiration portion of the respiration cycle is comprised of two phases, and wherein said regulation includes pressure-regulating the first of said two phases and flow-regulating the second of said two phases.

3,961,628

OCULAR DRUG DISPENSING SYSTEM

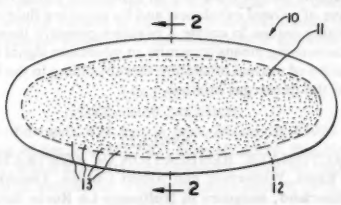
Randall K. Arnold, San Jose, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 493,819, Aug. 1, 1974, abandoned, which is a continuation of Ser. No. 227,051, Feb. 17, 1972, abandoned. This application Apr. 21, 1975, Ser. No. 569,953

Claims priority, application Italy, Apr. 10, 1974, 68147/74

Int. Cl.[2] A61M *31/00*

U.S. Cl. 128—260 **30 Claims**



1. An ocular delivery device for the continuous administration of drug over a prolonged period of time comprising a sealed container shaped for insertion into the eye, the container having a pair of first and third membrane walls spaced from each other, each formed of a material insoluble in tear fluid, with at least one of the membrane walls being permeable to the passage of drug by diffusion at a controlled rate, and a second ring-shaped wall interposed between and sealingly engaging the first and third membrane walls along their outer faced peripheries to define an integral unit and form a reservoir defined by the inner surfaces of the first, second and third walls, said reservoir containing drug which is released therefrom at a controlled rate by passage through the rate controlling membrane wall.

3,961,629

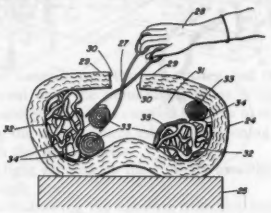
USING HYDROPHILIC POLYURETHANE LAPAROTOMY SPONGES

Ferdinand Joseph Richter, and Charles Teets Riall, both of Danbury, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 736,181, June 11, 1968, Pat. No. 3,566,871. This application Feb. 26, 1971, Ser. No. 119,299

Int. Cl.[2] A61F *13/00*

U.S. Cl. 128—296 **1 Claim**



1. A method for removing internal body fluids from surgical incisions which comprises contacting internal body fluids with a sterile hydrophilic sponge adapted for medical usage comprising a thin flexible hydrophilic polyurethane foam,

a. the surface of said foam being non-abrasive towards internal body organs exposed during surgery,

b. said foam containing at least one zone of intercommunicating pores extending inwardly from a surface of the foam,

c. said pores being of sufficiently small dimension to insure retention of body fluids therein substantially by capillarity,

d. the surface of said pore zone being substantially free from obstructions which inhibit flow of fluids into the pores,

e. substantially all of the internal surfaces of said pores being hydrophilic and substantially non-foaming when the sponge is moistened,

f. the polyurethane foam being crushed to possess dead fold characteristics whereby when once placed in position, the foam does not resiliently return by elastic memory to a different position, and

g. the sponge being stored in sterile condition in a strippable package and just before use, the package is stripped open to release the sponge in sterile condition, and the sponge is then aseptically transferred to contacting relationship with raw body tissues,

whereby substantial amounts of internal body fluids based on the dry weight of the sponge are absorbed by the sponge and removed from their environment upon contact of said internal fluids with said pore zone, and then removing said sponge containing said absorbed fluids from the body environment.

3,961,630

PROTECTIVE CIRCUIT FOR RADIO-FREQUENCY ELECTROSURGICAL DEVICE

Donald I. Gonser, Forest Park, Ohio, assignor to Dentsply Research & Development Corporation, Milford, Del.

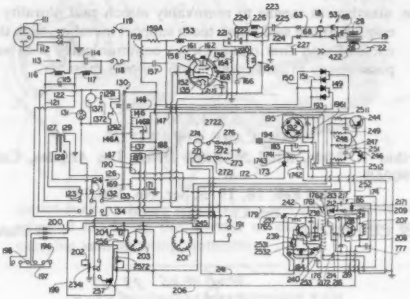
Division of Ser. No. 414,646, Nov. 12, 1973, Pat. No. 3,870,047. This application Dec. 5, 1974, Ser. No. 529,608

Int. Cl.[2] A61B *17/36;* **A61N** *3/02*

U.S. Cl. 128—303.14 **4 Claims**

1. In an electrosurgical device, means for generating a radio-frequency electrosurgical current, a handpiece, means on the handpiece for holding an electrosurgical instrument, a

passive electrode coupled to the generating means to provide return from a patient and a circuit connecting the generating means to the instrument holding means which comprises a plurality of condensers connected in series between the generating means and the instrument holding means and inductance means connected between successive condensers and ground, the inductance means discharging non-radio-frequency current to ground in the event of condenser failure.

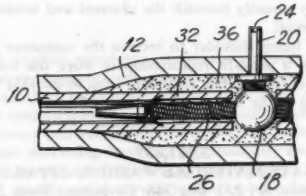


3,961,631

METHODS FOR APPLYING SURGICAL SPLINTS

Louis Bucalo, Holbrook, N.Y., assignor to Investors In Ventures, Inc., New York, N.Y.

Filed June 20, 1974, Ser. No. 481,136
Int. Cl.[2] A61B 17/12; A61F 1/24
U.S. Cl. 128—334 R 6 Claims



1. In a surgical procedure, the steps of surgically displacing tissue which normally covers a body part away from a portion of the body part to expose said portion thereof, while leaving said tissue connected with said body part beyond said exposed portion thereof, performing a given surgical treatment on the thus-exposed portion of the body part, thereafter covering the exposed portion of the body part with a highly viscous semisolid substance, and returning the previously displaced tissue to a position covering the semisolid substance and forming with said portion of the body part a pocket in which the semisolid substance becomes situated between the previously exposed portion of the body part and the returned tissue, the body part being tubular while the treatment involves inserting at least part of an implant into the tubular body part so that the semisolid substance presses the tubular body part inwardly radially toward the implant.

3,961,632

STOMACH INTUBATION AND CATHETER PLACEMENT SYSTEM

Mohamed H. Moossun, Box 237, R.R. 4, Elizabethtown, Ky. 42701

Filed Dec. 13, 1974, Ser. No. 532,735
Int. Cl.[2] A61B 17/34; A61M 25/00
U.S. Cl. 128—347 6 Claims

1. A method of stomach manipulation for perforation thereof to receive a catheter comprising the steps of:

intubating the stomach with an elongate flexible tubular member having a magnetically attractable tip thereon,

magnetically attracting said tube tip from externally of the body thereby translating the stomach wall adjacent the tube lip laterally toward the body exterior and thereby displacing yieldable body members normally disposed therebetween, and

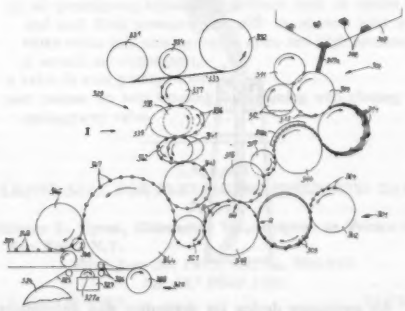
perforating the body abdominal wall and the stomach therebehind in the immediate area of the magnetically attracted tip.

3,961,633

METHOD AND MACHINE FOR THE PRODUCTION OF COMPOSITE FILTER MOUTHPIECES

Bernhard Schubert, Neu Boernsen, and Otto Blidung, Geesthacht, both of Germany, assignors to Hauni-Werke Korber & co., KG, Hamburg, Germany

Division of Ser. No. 275,096, July 25, 1972, Pat. No. 3,834,285. This application June 27, 1974, Ser. No. 483,668
Claims priority, application Germany, July 26, 1971, 2137318; July 26, 1971, 2137319; Sept. 10, 1971, 2145375
Int. Cl.[2] A24C 5/48, 5/58
U.S. Cl. 131—94 9 Claims



9. In a machine for the production of filter tipped rod-shaped smokers' products of the type wherein a wrapped tobacco rod section is united with at least one coaxial filter plug and at least one coaxial filter disk, a combination comprising a continuously moving wrapping conveyor having a plurality of parallel receiving means and means for continuously moving said receiving means sideways; first, second and third feeding means for respectively supplying to successive receiving means at least one wrapped tobacco rod sec-

tion, at least one filter plug and at least one filter disk with the latter located between the respective filter plug and the respective tobacco rod section, said wrapping conveyor comprising retaining means for holding the filter disks in said receiving means against movement out of axial alignment with the respective tobacco rod sections and said retaining means comprising suction-operated means for attracting said filter disks to the respective tobacco rod sections; and fourth feeding means for supplying adhesive-coated uniting bands to said receiving means, said wrapping conveyor further comprising means for convoluting said uniting bands around the respective filter disks, filter plugs and tobacco rod sections.

3,961,634

HAIR BLEACHING PREPARATIONS CONTAINING KERATOSE AND PROCESSES OF USING THE SAME

Peter Busch, Willich, Germany, assignor to Henkel & Cie G.m.b.H., Dusseldorf, Germany

Filed July 23, 1974, Ser. No. 491,050

Claims priority, application Germany, July 30, 1973, 2338518

Int. Cl.² A45D *7/04*; A61K *7/135*

U.S. Cl. 132—7 **9 Claims**

5. In a process for bleaching hair which comprises applying a bleaching agent containing an oxidizing agent to the hair at a temperature and for a time effective to bleach said hair, and removing said agent from the hair; the improvement which consists essentially in utilizing from 0.05% to 10% by weight of keratose in said bleaching agent containing an oxidizing agent.

3,961,635

HAIR TREATING LIQUID APPLICATOR

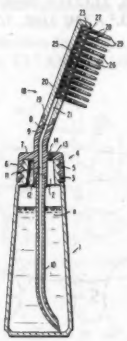
Yoichi Miya, Tokyo, Japan, assignor to Shiseido Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1974, Ser. No. 537,510

Claims priority, application Japan, Dec. 29, 1973, 49-1154[U]; Dec. 29, 1973, 49-1155[U]; Dec. 29, 1973, 49-1156[U]; Jan. 28, 1974, 49-11824[U]; Mar. 30, 1974, 49-36412[U]

Int. Cl.² A45D *20/00*

U.S. Cl. 132—11 R **10 Claims**



1. An applicator device for depositing and distributing a liquid on the hair comprising:

a. a supply reservoir having an open end;

b. a cap portion attached to said open end of said supply reservoir, said cap portion having a first passageway therethrough communicating with the interior of said supply reservoir;

c. a comb tooth support member attached to said cap portion, said comb tooth support member having a passageway extending partially therethrough and communicating with said passageway through said cap portion;

d. a plurality of comb teeth each having a first passageway extending partially therethrough in a longitudinal direction and a second passageway extending laterally through said comb tooth and communicating with said first passage, said second passageway located at the approximate midpoint between the comb tooth ends to allow placement of the liquid onto the hair without contacting the scalp; and

e. attachment means to removably attach said plurality of comb teeth to said comb teeth support member, such that each of said first passageways communicates with said passageway in said comb tooth support member.

3,961,636

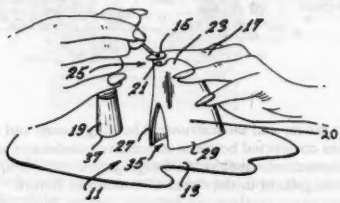
NAIL CARE APPARATUS

Arthur N. Mele, 3387 N. Knoll Drive, Los Angeles, Calif. 90068

Filed Feb. 18, 1975, Ser. No. 550,771

Int. Cl.² A45D *29/00*

U.S. Cl. 132—73 **13 Claims**



1. In combination for use with a container of nail polish,

a housing,

a pair of sholder portions disposed on the housing and defining a channel for receiving the particular finger, the channel being configured to support the particular finger in a position separated from the remaining fingers on the hand of the user;

the housing including a plurality of sidewalls extending from the shoulder portions to support the shoulder portions in an elevated position and defining at least one cavity substantially directly beneath the channel and interiorly of the housing;

the cavity being shoulder to receive the container of nail polish in a press-fit relationship to store the container when the container is not being used to provide for the polishing of the nail of the particular finger.

3,961,637

AGGREGATE MATERIALS WASHING APPARATUS

Clyde W. Owen, Sr, P.O. Box 368, Covington, Tenn. 38019

Filed Dec. 12, 1974, Ser. No. 532,033

Int. Cl.² B08B *3/04*, *3/10*

U.S. Cl. 134—104 **9 Claims**

1. Aggregate materials washing apparatus comprising:

a cylindrical drum including an interior wall, and first and second end walls containing respectively an outlet and an inlet;

means for infeeding aggregate and wash fluid to said drum at said inlet;

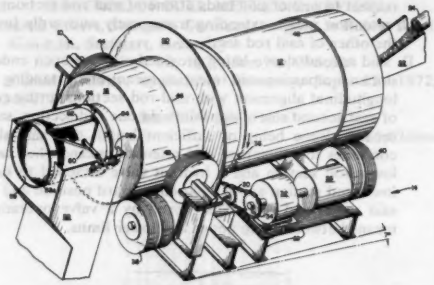
said drum being inclined from the horizontal to provide a flow of the aggregate and wash toward the outlet;

power means for rotating said drum about its longitudinal axis;

a plurality of longitudinally extending agitator elements spaced around the interior wall of said drum for tumbling the aggregate during rotation of the drum;

a plurality of imperforate, scoop-shaped pumping elements extending radially between the interior wall and said outlet, said pumping elements scooping up both wash

fluid and aggregate from said interior wall below said outlet and transferring the fluid and aggregate to said



outlet during rotation of said drum and a replaceable liner adapted for lining the interior of said drum, said liner carrying said agitating elements.

3,961,638

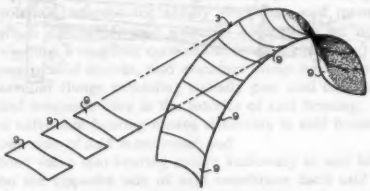
VAULTED MEMBRANE SHELTER

Carl F. Huddle, Pleasant Ridge, Mich., assignor to Tension Structures Co., Pleasant Ridge, Mich.

Continuation-in-part of Ser. No. 225,899, Feb. 14, 1972, Pat. No. 3,820,533, which is a continuation-in-part of Ser. No. 93,293, Nov. 27, 1970. This application May 23, 1974, Ser. No. 467,906

Int. Cl.² A45F *1/12, 1/16*

U.S. Cl. 135—4 R **19 Claims**



1. A vaulted membrane structure comprising two arches with curved bights mounted on a base in substantially vertical positions, face to face but spaced apart from each other to form a vaulted frame work; a flexible roof membrane extending between and being operatively attached to said arches and said base, and being tensioned longitudinally and transversely with an inward concave curvature between the bights of said arches, said concave curvature having been formed by said membrane having a progressively shorter circumferential length from where it is operatively attached to said arches to its circumferential length in a vertical plane midway between said arches; and means for holding said arches apart that includes at least one strut to maintain tension in said membrane.

3,961,639

METHODS AND COMPOSITIONS FOR REDUCING THE FRICTIONAL RESISTANCE TO FLOW OF AQUEOUS LIQUIDS

Jen-Lin Chang, Chicago, Ill., and Jacques L. Zakin, Rolla, Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Filed Sept. 10, 1973, Ser. No. 395,946

Int. Cl.² F17D *1/08*

U.S. Cl. 137—13 **10 Claims**

1. A method for reducing the frictional energy losses in the flow of an aqueous liquid along a surface comprising:

incorporating into said liquid a polyethylene oxide alkyl alcohol surfactant;

moving said liquid on a flow path along said surface at a velocity sufficient to provide a Reynolds number greater than about 4000 based on the properties of water; and

maintaining the temperature of said liquid near to or greater than its cloud point, whereby the frictional energy loss per unit length of said flow path is less than the corresponding loss of energy which occurs when moving substantially pure water at the same volumetric rate on the same path.

3,961,640

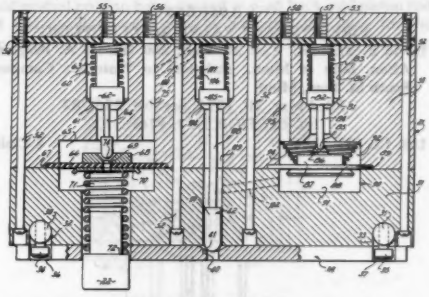
DENTAL HANDPIECE CONTROL

Ronald L. Baker, Florence, Ky., assignor to Thomas G. Lutes, Fort Mitchell, Ky., a part interest

Filed Sept. 23, 1974, Ser. No. 508,153

Int. Cl.² A61C *1/05*

U.S. Cl. 137—87 **10 Claims**



1. A control for regulating the supply of water and air to a dental handpiece comprising,

a housing,

an air inlet port and an air outlet port in said housing,

an air valve interconnecting said air ports,

an operator for said air valve having a portion projecting from said housing,

a water inlet port and a water outlet port in said housing,

a water valve interconnecting said water ports,

a fluid pressure operator for said water valve,

an air passageway connected between said air outlet port and said fluid pressure operator to operate said water valve when said passageway is open and high pressure air is at said air outlet port,

a valve in said passageway,

and means on said housing for opening and closing said passageway valve.

3,961,641

LIQUID SEAL FOR PREVENTING PNEUMATIC BACK FLOW

Thomas L. Tyson, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed June 20, 1975, Ser. No. 588,929

Int. Cl.² F04F *1/00*

U.S. Cl. 137—209 **11 Claims**

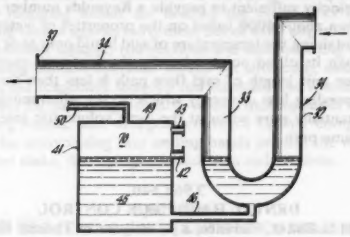
1. A liquid seal for preventing back flow in a gas line having a pump associated therewith for circulating said gas, comprising in combination

a U-shaped conduit adapted for connection to the inlet of said gas line,

a reservoir for holding a supply of said sealing liquid and having an overflow located at a predetermined level above the bottom of said U-shaped conduit, and

a liquid flow passage connecting the bottom of said U-shaped conduit with said reservoir,

said reservoir having a closed top with means for connecting the ullage space to a valve means for alternatively connecting said ullage space to the inlet of said gas line or to suction of said circulating pump.

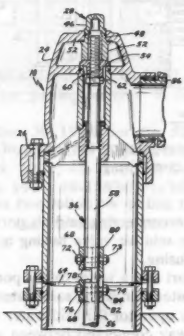


3,961,642

FIRE HYDRANT VALVE ROD COUPLING

David F. Thomas, West St. Paul, and Harold A. Berglund, Afton, both of Minn., assignors to Waterous Company, South St. Paul, Minn.

Filed Mar. 10, 1975, Ser. No. 556,782
Int. Cl.² E03B 9/14; F16D 1/00
U.S. Cl. 137—272 **4 Claims**



1. In a hydrant having a bottom housing; a valve seat in said housing; a hydrant valve operably associated with said valve seat and movable vertically between a first upper closed position in sealing relation to said seat and a second lower open position in spaced relation to the seat; a breakaway standpipe extending upwardly from said housing in surrounding relation to said valve seat; a nozzle section extending outwardly of said standpipe and including at least one nozzle; a main valve control rod including a lower valve rod section extending upwardly from said valve, an upper valve rod section extending upwardly from said lower rod section and in axial alignment therewith, and breakaway coupling means coupling said upper and lower rod sections to each other; and valve operating means operable from outside said nozzle section to move said upper rod section between upper and lower finite limits in an upward direction to cause said valve to move to said first closed position and in downward direction to cause said valve to move to said second open position; the improvement in said breakaway coupling means wherein said coupling means includes:

A. a first frangible sleeve fixedly positioned with respect to a lower end of an upper rod section and fixedly positioned with respect to an upper end of a lower rod section to maintain said rod sections in fixed, axially aligned relationship to each other, said sleeve being breakable under overload conditions to release said rod sections from each other;

B. a second non-frangible sleeve fixedly positioned with respect to one of said ends of one of said rod sections;

C. retention means extending transversely outwardly from the other of said rod sections;

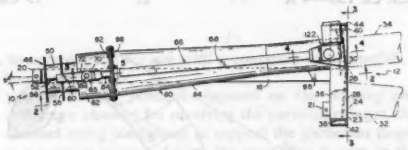
D. said second sleeve being provided with an open ended slot encompassing said retention means and extending in longitudinal alignment with said rod sections to the end of said second sleeve opposite said one rod section, said second sleeve being of sufficient length that said slot continues to encompass said retention means when said lower rod section and a hydrant valve attached to said lower rod section are in a closed, upward position and as said upper rod section is moved by a valve operating means between finite upper and lower limits.

3,961,643

VALVE SHIFTING SYSTEM

Peter D. Lynch, Portland, Oreg., assignor to Rader Companies, Inc., Portland, Oreg.

Filed Dec. 2, 1974, Ser. No. 528,632
Int. Cl.² F17D 3/03
U.S. Cl. 137—610 **14 Claims**



7. A shifting apparatus for connecting a first conveying line between a plurality of other conveying lines comprising:

a frame,

switching plate means mounted on said frame, said switching plate means having a plurality of ports for communication with said other conveying lines,

conveying line connector means mounted on said frame, and adapted to be connected to said first conveying line,

arm means extending from said conveying line connector means to said switching plate means, said arm means being pivotally connected to said conveying line connector means and supported by said switching plate means in a manner permitting sliding of said arm means on said switching plate means while said arm means rotates about said conveying line connector means,

a pivot tube supported at one end by said arm means and coupled at the opposite end to said conveying line connector means in a manner permitting rotation of said pivot tube about an axis parallel to the axis of rotation of said arm means and forward and backward motion of said pivot tube relative to said switching plate means,

said pivot tube being adapted to be positioned selectively in communication with said ports to form a continuous passageway from said conveying line connector means through said pivot tube and said switching plate means,

and drive means for shifting the end of said pivot tube adjacent to said switching plate means between said ports in a cycloidal path.

3,961,644

FLAT SEAT VALVE, IN PARTICULAR, FOR THE CONTROL OF FUEL METERING DEVICES

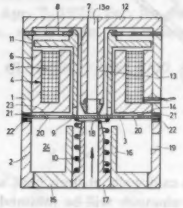
Konrad Eckert, Stuttgart, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Sept. 12, 1973, Ser. No. 396,526

Claims priority, application Germany, Sept. 22, 1972, 2246477

Int. Cl.[2] F16K 31/06

U.S. Cl. 137—625.65 13 Claims



1. A flat seat valve for the control of the flow of a fluid medium, comprising

a valve housing;

a control membrane clamped-in fixedly across the interior of said housing such that the membrane lies in a plane which extends substantially transversely with respect to the housing and divides the interior of said housing into two spaces, said membrane having at least one aperture establishing free communication between the two spaces;

a solenoid adapted for axially displacing said membrane when energized, said solenoid comprising an exciting winding, a magnetic core and an armature arranged about one of said sleeves, said armature comprises an external annular flange extending radially past said exciting coil and magnetic core in the interior of said housing;

first valve seat-bearing means stationary in said housing on one side of said membrane; and

second valve seat-bearing means stationary in said housing on the opposite side of said membrane each said valve seat-bearing means comprises a tubular sleeve which projects from an interior wall of said housing toward said membrane therein and includes a valve seat at its end adjacent said membrane, said valve seats being of different diameter and defining along with their respective tubular sleeves a flowpath for said fluid medium;

Whereby displacement of the membrane produces a change in the distance of said membrane from one of said valve seats and hence in the width of the one flowpath past said valve seat and a change in the opposite sense in the distance of the membrane from, and hence the width of the other flowpath past, said other valve seat.

3,961,645

FLUID-CONVEYING PIPE CONNECTOR

Aristide Jean Michel Kagan, 14 bis, Avenue Pierre Curie, 77330 Ozoir-la-Ferriere, France

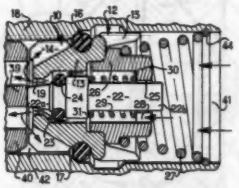
Filed Dec. 19, 1974, Ser. No. 534,573

Claims priority, application France, Dec. 21, 1973, 73.46106

Int. Cl.[2] F16L 29/00

U.S. Cl. 137—630.15 5 Claims

1. A connector forming a junction between the free ends of two ducts one of which communicates with a source supplying a fluid under pressure, said connector comprising a first part fitting the free end of the duct connected to said source and a second part mounted on the free end of the second duct, said first part comprising a main valve having a seat closing off said free end of the first duct and urged upon closing against its seat by the action of the fluid feed pressure prevailing in the first duct, said first part further comprising a second auxiliary valve having a seat also closing off said end of the first duct and which is also urged upon closing against its seat by the action of the fluid feed pressure prevailing in said first duct, said seat of said auxiliary valve having a reduced section as compared with that of said main valve, said second connector part co-operating with control members for the opening of said valves which are so arranged that when both connector parts are drawn near each other for connecting the same together said second part will at first open said auxiliary valve while allowing a small fluid flow rate to pass from said first duct to the second duct at the beginning of the coupling step of said connector and then will open said main valve, said main and auxiliary valves including biasing springs returning said valves to their closing position, said auxiliary valve comprising a piston rod forming the head of the valve, said piston rod being coaxial with said main valve, said seat of said auxiliary valve being formed within the head of said main valve, said piston rod passing through said seat, said second connector part comprising a central portion and an annular portion, said central portion being caused to push back said piston rod of said auxiliary valve thereby actuating the same for the opening thereof, said annular portion portion being caused to



push back said head of said main valve thereby actuating the same for opening thereof, said central portion and said annular portion being so disposed that said auxiliary valve is actuated for opening before said main valve; a fluid-tight seal mounted on said head of said main valve to co-operate with said seat of said main valve, said head having passages for the flow of said fluid therethrough when said head is not applied against its seat, said head being provided with a central aperture forming said seat for said auxiliary valve, said piston rod of said auxiliary valve comprising first and second ends, said first end projecting towards said second connector part through said central aperture of said main valve and forming said head of said auxiliary valve, a fluidtight seal mounted on said first end for co-operating with said seat formed in said head of said main valve, a cap mounted so as to bear against said head of said main valve under the action of the biasing spring returning said main valve to the closing position, said cap having a passageway through which said second end of said piston rod is guided, a sleeve locating said first connector part and connectable to said free end of said first duct, an abutment on said sleeve, said biasing spring of the main valve being mounted between said cap and said abutment, said cap having further passageways for allowing the ingress of said fluid towards said auxiliary valve.

3,961,646

PRESSURE ACCUMULATOR

Otmar Schön, Scheidterberg, Germany, assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Filed Mar. 13, 1975, Ser. No. 557,876

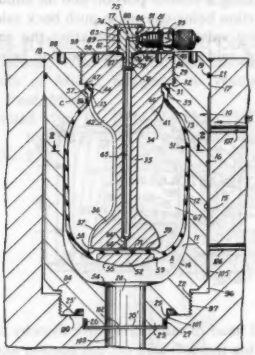
Claims priority, application Germany, Oct. 1, 1974, 2446798

Int. Cl.[2] F16L 55/04

U.S. Cl. 138—30 3 Claims

1. A pressure accumulator comprising an elongated rigid hollow housing, the interior wall surface of which has a cylindrical central portion and two substantially hemispherical end

portions, said housing having an axial bore at one end along its longitudinal axis, defining an oil port extending into the interior thereof through one of said hemispherical end portions, the other end of the housing having an enlarged diameter axial bore, the outer end of said bore defining the mouth of the housing, an elongated support member having an axial bore therethrough and having a central cylindrical portion and two end portions each being substantially hemispherical and formed about a point lying toward the interior center of the housing, means to retain said support member in fixed position in said housing extending axially thereof, one of said end portions being longitudinally spaced from said oil port, a deformable bladder in said housing extending axially thereof, said bladder having one end closed and having a mouth at its other end, said bladder encompassing said support member, means to retain the mouth end of the bladder in fixed position, the outer end of said axial bore in said support member being



threaded, a pin having a threaded stem screwed into said threaded outer end, said pin having a protruding head, a block having a bore into which said head extends for rotary mount of the block, said pin having an axial passageway through the stem thereof and a transverse passageway leading into said axial passageway, said block having a transverse bore in communication with said transverse passageway and a valve member in said transverse bore for connection to a source of gas under pressure to charge said bladder with gas under pressure, said bladder being movable between an outward expanded condition in which it engages the wall surface of the interior of said housing and an inward deformed condition in which at least a portion of the bladder engages said support member, the dimensions and configuration of said bladder and the interior of said housing and the support member being such that the bladder will move from its outward to its inward condition without the formation of sharp folds therein.

3,961,647

SUCTION PIPE HAVING MEANS TO SUPPORT A SUPPLY CONDUIT

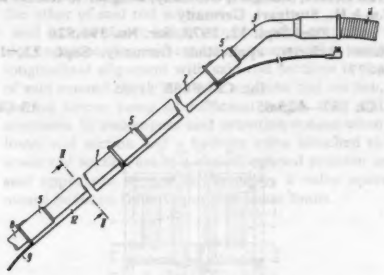
Eric G. Doubleday, Am Kraherwald 167, 7 Stuttgart-W, Germany

Filed Jan. 6, 1975, Ser. No. 539,012

Int. Cl.² F16L *11/12, 55/00*

U.S. Cl. 138—103 **5 Claims**

1. In a suction pipe for a suction operated cleaning device, a plurality of pipe sections having means for assembly by end to end telescopic engagement, and means on said pipe sections for supporting an electric cable, the means on each section integral with the section comprising a pair of thin, resilient longitudinal walls extending along substantially the length of said pipe section to form a channel opening outwardly, said walls being inclined toward a radial plane between the walls and having restrictive formations along their outer edges to reduce the space between the walls to less than



the space between said walls at their base along said pipe, so that a cable in the channels will be retained by the restrictive formations on the outer edges of said walls.

3,961,648

POSITIVE SHEDDING MOTION DEVICE FOR A CIRCULAR LOOM

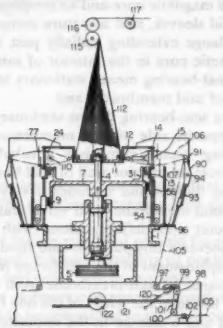
Soichi Torii, Kyoto, Japan, assignor to Torii Winding Machine Co., Ltd., Kyoto, Japan

Filed Apr. 24, 1974, Ser. No. 463,438

Claims priority, application Japan, Oct. 11, 1973, 48-114504

Int. Cl.² D03D *37/00*

U.S. Cl. 139—13 R **1 Claim**



1. A positive shedding motion device for a circular loom for tape yarn, wherein said circular loom is provided with a shuttle guide ring apparatus at the center of the loom, a shuttle guide race device which is arranged concentrically with said shuttle guide ring apparatus, a shuttle which is mounted between said guide ring apparatus and said shuttle guide race device, and is moved by the rotation of a cam disc and a warp yarn guide which is positioned at the outermost apex of the warp yarn shed and at the outermost ends of the warp lines of the warp yarns which are arranged horizontally, and each pair of inner and outer heald frames and the driving device therefore comprises an inner heald frame, which is provided with a supporting sheet secured on the side of a sliding piece moving up and down and also mounted on one side of an endless belt, an outer heald frame, which is provided with a supporting sheet mounted on another side of an endless belt, an endless belt onto the surface of which an outer heald frame supporting sheet and an inner heald frame supporting sheet are mounted, respectively, and a pair of upper and lower guide pulleys

arranged in a vertical arrangement and around both pulleys said belt is mounted, wherein said device comprises, several sections of heald frames arranged on one complete circle, wherein each section consists of a plurality of inner and outer heald frames.

3,961,649

HEDDLE FRAME ARRANGEMENT FOR A WEAVING MACHINE

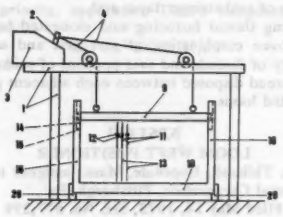
Joseph Palau, Haute-Savoie, France, assignor to Staeubli, Ltd., Horgen-Zurich, Switzerland

Filed Apr. 7, 1975, Ser. No. 565,393

Claims priority, application Switzerland, Apr. 9, 1974, 4973/74

Int. Cl.[2] D03C *13/00, 9/00, 9/02*

U.S. Cl. 139—82 17 Claims



1. A heddle frame arrangement for a weaving machine, comprising:

a base;

a frame secured to said base, said frame consisting of a pair of horizontally spaced and parallel side members and an abutment member, said side members and abutment member defining a plane;

vertically aligned guide means mounted on said side members;

a horizontally aligned and vertically movable bar extending between said side members, the ends of said horizontally aligned bar cooperating with said vertically aligned guide means to maintain a coplanar relationship thereof to said plane of said frame;

at least one heddle secured at one end to said horizontally aligned bar and having an eyelet therein for receiving a warp thread;

first securement means on an end of said heddle remote from said end secured to said bar; and

resilient means secured to and extending between said first securement means and said abutment means to resiliently hold said heddle taut and at least assisting in urging said horizontally aligned bar toward the lowermost position thereof.

3,961,650

WEAVING METHOD AND MACHINE

Ruthard Marowsky, Kreuzbergstrasse 56, D-5630 Remscheid 12, Germany

Filed Jan. 22, 1974, Ser. No. 435,491

Claims priority, application Germany, Jan. 22, 1973, 2302949

Int. Cl.[2] D03D *49/00;* D03J *1/06, 1/08*

U.S. Cl. 139—291 R 6 Claims

1. A method of forming a plurality of patterned strips of fabric woven from threads of synthetic material using a broad weaving machine having a sley and a breast beam, which method comprises:

weaving on the broad weaving machine a unitary broad fabric with said strips to be formed extending in parallel relation along the warp direction of said fabric;

conveying said fabric from the position where the sley of said machine beats up the fabric at a sufficiently low warp tension that a boxing condition occurs to obviate weft arching;

guiding the woven fabric leaving the position where the sley beats up the fabric to allow movement towards the breast beam of said machine, but not in the opposite direction;

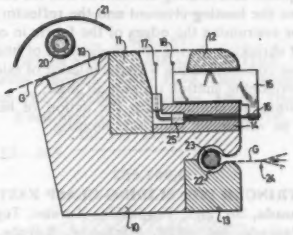
cutting the guided woven fabric in the warp direction with a heated cutting blade means maintained at a first temperature of at least about 300° C to form strips whereby the edges are welded by the heat and thereby avoids ripping;

separating said strips;

and thereafter further heating the entire body of said separated strips at a second temperature lower than said cutting temperature to relieve varying tensile stress therein by thermostabilization.

2. In a broad fabric weaving machine having a sley and a breast plate for forming a plurality of strips of fabric from threads of synthetic fiber, the improvement comprising:

a fabric guiding station extending across the width of said machine at the output from the machine where the sley beats up the fabric and ahead of the breast plate, said



fabric guiding station comprising a slot and a rounded guide bar therebehind to define a re-entrant part-annular path for passage of woven fabric into said slot, round said bar and back out of said slot;

said guide bar being formed with a left-hand fabric guided thread over the right-hand half of its length in the direction towards a cutting station, and a right-hand guiding thread over its left-hand half;

a heating and cutting station downstream from said guiding station in the fabric path to said breast plate, which station includes a plurality of electrically heated cutting wires successively spaced across the width of said machine in the direction of the weft and extending into the path of the fabric for heating and cutting said woven fabric into desired width separated strips parallel to the warp of the fabric and for heating the cut edges of said strips to weld the same;

and a second heating station comprising an elongated heating member to heat said separated strips extending across the width of said machine downstream from said hot wire cutting and cut edge heating station towards said breast beam for heating the strips at a temperature lower than said cutting temperature to effect thermostabilization of said strips.

3,961,651

APPARATUS FOR HEAT TREATING FABRIC AT THE LOOM

George H. Balentine, Jr., State Park Road, Greenville, S.C. 29601

Filed July 24, 1974, Ser. No. 491,402

Int. Cl.[2] D03D *49/00;* D06C *3/10;* F26B *3/32, 13/00*

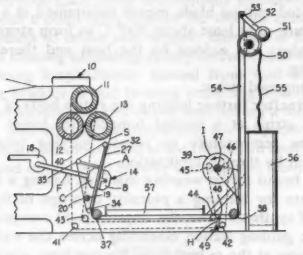
U.S. Cl. 139—291 R 2 Claims

1. An apparatus for heat treating fabric at the loom comprising:

an elongated housing extending across the full width of the fabric;

a passageway extending through said housing permitting the fabric to pass therethrough in open width and dividing said housing defining a pair of opposed chambers therein;

a heating element carried by said housing in one chamber;



a heat reflector carried by said housing in the other chamber opposite said heating element so that the fabric passes between the heating element and the reflector;

means for restraining the edges of the fabric in open width against shrinkage during the application of heat thereto;

an air hose communicating with the interior of said housing;

means developing suction on said air hose;

whereby fumes developing from the action of heat on the fabric may be withdrawn from said housing.

3,961,652

TAPE STRINGER FOR SLIDING CLASP FASTENERS

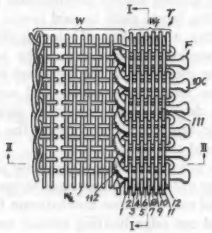
Minoru Hasuda, No. 265, Tenjinshin, Kurobe, Toyama, and Yasuo Yamada, No. 4024, Mikkaichi, Kurobe, Toyama, both of Japan

Continuation of Ser. No. 378,251, July 11, 1973, abandoned, which is a continuation of Ser. No. 783,049, Dec. 11, 1968, abandoned. This application Sept. 4, 1974, Ser. No. 503,067

Claims priority, application Japan, Sept. 28, 1967, 42-12440; Dec. 21, 1967, 42-82156; July 23, 1968, 43-51947

Int. Cl.[2] D03D *3/00*

U.S. Cl. 139—384 B **7 Claims**



1. In combination:

a. a row of successively connected together elongated loops, each of said loops having a coupling portion at one end thereof dimensioned to releasably couple with mating loops of another row of loops, and an upper leg and a lower leg extending from said coupling portion in a common direction, said upper leg and said lower leg each having a portion remote from said coupling portion connected to a next adjacent one of said loops;

b. a stringer tape comprising a continuous weft thread extending in a transverse dimension of said tape and having an extent defining the width of said tape, said continuous weft thread having portions disposed between each adjacent pair of said elongated loops and coextensive with substantially the entire length of the legs of the loops, a first plurality of threads extending longitudinally of said stringer tape and alternately overlying an upper leg and underlying a lower leg of successive ones of said elongated loops, said first plurality of threads being interwoven with the portions of said continuous weft thread between said elongated loops and disposed extending substantially the entire length of the legs of said loops, a second plurality of threads extending longitudinally of said stringer tape and alternately underlying a lower leg and overlying an upper leg of said successive ones of said elongated loops, said second plurality of threads being interwoven with the portions of said continuous weft thread between said elongated loops and disposed extending substantially the entire length of the legs of said loops, and a plurality of warp threads extending longitudinally of said stringer tape and interwoven with said continuous weft thread to jointly define therewith a web portion of said stringer tape; and

c. a sewing thread fastening said elongated loops to the interwoven combination of said first and said second plurality of threads and said portions of said continuous weft thread disposed between each adjacent pair of said elongated loops.

3,961,653

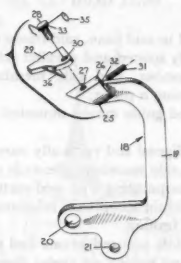
LOOM WEFT POSITIONER

Harrison N. Thibault, Hopedale, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 14, 1975, Ser. No. 577,299

Int. Cl.[2] D03D *47/34*

U.S. Cl. 139—450 **3 Claims**



1. In a shuttleless loom of the type having an external stationary weft supply source, reciprocable carrier means for inserting picks of weft from said source into sheds of warp threads, a weft control member comprising:

a. a depressor arm;

b. a weft engaging member;

c. means mounting said weft engaging member on said depressor arm, said means providing for movement of said weft engaging member to release the weft after its engagement by the carrier means; and

d. cam controlled linkage members operatively connected to said depressor arm for moving the latter in a path to cause said weft engaging member to engage each pick of weft and present it to the carrier means.

3,961,654

LOG CUTTING AND REJOINING PROCESS

Earl Dean Hasenwinkle, Longview, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

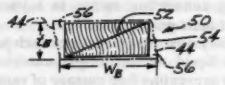
Filed Feb. 20, 1973, Ser. No. 333,911

Int. Cl. B32b *3/14*

U.S. Cl. 144/316 **16 Claims**

1. The process for making composite lumber products from generally cylindrical logs comprising the steps of:

cutting a log radially into a plurality of sector-shaped pieces, and



bonding no more than two sector-shaped pieces together along radial faces such that the thin edge of one is approximately adjacent the thick edge of the other.

3,961,655

BULK MATERIAL CONTAINERS

Frank Nattrass, Fallows End, Brearton, Harrogate, Yorkshire, and Peter Johnson Nattrass, Tresco, Chain Lane, Knaresborough, Yorkshire, both of England

Filed Sept. 16, 1974, Ser. No. 506,569

Claims priority, application United Kingdom, Sept. 17, 1973, 43599/73

Int. Cl.² B65D *29/02*

U.S. Cl. 150—1 **3 Claims**

1. A bag, for transporting bulk material, comprising:
an outer bag member comprising:
a base section having an opening defined therein; and
sidewalls;
means, secured to upper parts of said sidewalls, by which said bag may be lifted;
an inner liner within said outer bag member, said inner liner having a lower end terminating in a tubular section;
a first tube secured to said base section around the opening therein and projecting outwardly from said base section;
a second tube secured to said base section;
said first tube being disposed within said second tube;
said tubular section being disposed within said first tube;
means releasably securing said tubular section within said first tube; and
means releasably closing said second tube with said tubular section and said first tube being restrained wholly within said second tube by said releasable closing means.

3,961,656

PHONOGRAPH RECORD INSULATOR

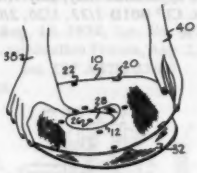
Lalit K. Aggarwal, 3718 Spring Garden St., Philadelphia, Pa. 19104

Filed Apr. 30, 1975, Ser. No. 573,246

Int. Cl.² B65B *1100*; B65D *65/04*

U.S. Cl. 150—52 R **8 Claims**

1. A pair of record insulators for covering the surfaces of a phonograph record, each of said record insulators having a hole at the center and an inner surface operable to contact one of the surfaces of the said phonograph record, and an outer surface opposite said inner surface, said inner surface comprising a layer of electrically-conductive material permanently affixed to the layer comprising the outer surface of the said record insulator, said layer of conductive material having an extended portion turned back and overlying the said outer surface layer at the periphery of the insulator, said record insulator being shaped and sized to fit the phonograph record, and having releasable mounting means engaging the perimeter of said record to temporarily maintain said insulator in place on said record, said mounting means affording removal of only



the insulator of said pair covering the side of the record to be played, so that the other side of the said phonograph record can remain covered by the other of the pair of record insulators while playing the phonograph record on conventional phonograph record players.

3,961,657

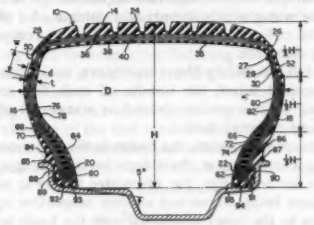
HIGH SPEED RADIAL PLY TIRE

Dennis Steven Chrobak, Silver Lake, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 3, 1974, Ser. No. 466,750

Int. Cl.² B60C *5/12*

U.S. Cl. 152—355 **19 Claims**



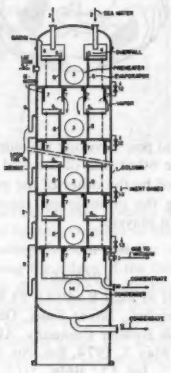
1. A pneumatic tire comprising a tread portion including a non-skid tread surface extending circumferentially thereabout; a pair of annular bead portions each including an annular inextensible bead core, a radially inner base surface, and an axially outer flange engaging surface; a sidewall portion extending between each axially outer edge of said tread portion to the respectively associated bead portion; a carcass structure extending from bead portion to bead portion; and a belt structure extending circumferentially about said carcass structure the improvement comprising; means extending circumferentially about said tire and disposed in the radially outer one-third of each sidewall portion to provide a flexible transition between said tread portion and the sidewall portions and said carcass structure including at least one carcass ply of continuous cord reinforced fabric extending circumferentially about the tire and from bead to bead at an angle of between 0° and 15° with respect to planes containing the rotational axis of the tire and wherein said tire was curved in a configuration in which two straight lines lying in a single plane containing the rotational axis of the tire and tangent respectively to said fabric at a point radially inwardly of the axially outer edge of said ground contacting surface and a point in the next adjacent sidewall located next adjacent the radially inner edge of said means are perpendicular to each other.

3,961,658

SEA WATER DESALINATION APPARATUS

Giorgio Pagani, Milan, Italy, assignor to Snam Progetti S.p.A., Milan, Italy

Continuation of Ser. No. 376,949, July 6, 1973, abandoned. This application Aug. 8, 1975, Ser. No. 603,186
Claims priority, application Italy, July 7, 1972, 26732/72
Int. Cl.² B01D *1/22, 1/26, 3/02*
U.S. Cl. 159—13 A 4 Claims



1. A multiple effect distillation apparatus for the desalination of sea water which comprises a column of a plurality of superposed cylindrical sections, each section comprising the following elements:

a. two interior falling film evaporators, each with a bundle of vertical tubes, the bundle of each film evaporator having a cross section shaped as a segment of a circle, without external shell;

b. two respective basins, the basins in the uppermost section being connected at their tops to their respective feed tubes for sea water, the respective basins in succeeding sections being connected at their respective upper tube sheets to the tubes associated with the basin in that section bundle which is immediately superjacent; all of said basins being connected at their bottoms to the respective upper tube sheet of the respective falling film evaporators of said same colinearly subjacent cylindrical section segmental bundle with the exception of those basins in the lowermost section which has its bottom connected to a brine discharge tube;

c. a restriction placed at the bottom of each basin, having the purpose of permitting the passage of the brine from the basin to the underlying tube sheet by dissipating the positive pressure difference existing between the basin and said tube sheet;

d. openings in the upper side of each basin except in the basins of the first section which allow vapor to flow from each of said basins about the tubes of the respective subjacent bundle, said openings having associated droplet removers or demisters returning captured droplets to their respective basins;

e. one or more siphon tubes for withdrawing the condensate collected at the bottom of each section and for reintroducing said condensate at the intermediate point of the succeeding subjacent section;

f. a horizontal tube bundle exchanger, for preheating the sea water, the preheating agent being the vapor produced in each single stage said preheating exchanger being centrally located between the pair of segmental film evaporators in each section;

g. means for transferring any inert gases from each section to the succeeding subjacent section; said lowermost section having connecting means to a vacuum system to collect said inert gases;

h. said vertically superposed sections each having a head of condensed liquid on its bottom except the lowermost section, for preventing free passage of vapor between said sections;

i. said apparatus having inlet tubes for the introduction of sea water to the basins of said uppermost section and inlet tubes for the introduction of steam to the exterior surfaces of the tube bundles of said uppermost section; and

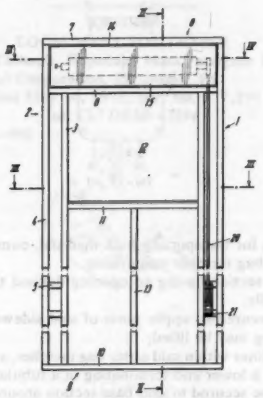
j. an outlet tube at said lowermost section for removing condensate.

3,961,659

PREFABRICATED WINDOW UNIT

Helmut Siegel, Heidelberger Strasse 10, D-6833 Kirrlach, Germany

Filed Oct. 10, 1974, Ser. No. 513,877
Int. Cl.² A47H *1/00, 1/13*
U.S. Cl. 160—26 2 Claims



1. A window unit comprising, in combination:

a. a rectangular frame including a pair of elongated, spacedly parallel first frame elements and a pair of spacedly parallel second frame elements elongated at right angles to said first elements and connecting said first elements,

1. said frame elements being located in a common plane,

2. each frame element including an inner member and an outer member spacedly parallel to said inner member,

3. said outer members having respective outer faces directed away from the associated inner members and exposed to the ambient atmosphere,

4. said inner members bounding a window opening in said frame,

5. the outer members of said first elements having respective terminal portions projecting longitudinally beyond the associated inner members,

6. the outer member of one of said second frame element being fixedly fastened to said terminal portions and connecting the same,

7. the inner member of said one second frame element being fixedly fastened to each of the outer and inner members of said first frame elements and connecting the same,

8. said members of said one second element and said terminal portions jointly bounding a rectangular opening,

9. the outer member of the other second element connecting respective longitudinal ends of the outer and inner members of said pair of first elements, and

10. the inner member of said other second frame element connecting the inner members of said first elements;

b. an elongated housing adapted to enclose a rolled-up sliding shutter,

1. said housing being received in said rectangular opening and fixedly connected to said one second element, and

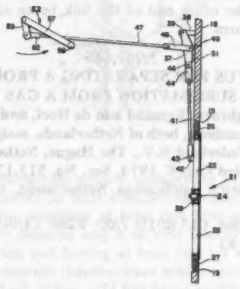
2. said housing being fixedly fastened to said terminal portions and connecting the same; and

c. operating means mounted on one of said first elements for moving a sliding shutter between an inoperative position and an operative position, said sliding shutter being substantially completely received within said housing when in said inoperative position, and said shutter blocking said window opening in said operative position thereof.

3,961,660
DOOR OPERATING APPARATUS

J. Fredrick Vinci, Forest City, Iowa, assignor to Winnebago Industries, Inc., Forest City, Iowa

Filed Mar. 6, 1975, Ser. No. 556,166
Int. Cl.² E05F *11/10*
U.S. Cl. 160—188 **16 Claims**



1. A vehicle comprising: a body having a passenger compartment and a wall having a doorway open to the passenger compartment, door means for selectively opening and closing the doorway, apparatus for opening and closing the door means, said apparatus having a control link with a first portion and a second portion, a support attached to the wall, first pivot means pivotally connecting the first portion to the support, rod means connecting the second portion to the door means whereby movement of the control link will open and close the door means, second pivot means connecting the rod means to the second portion, third pivot means pivotally connecting the rod means to the door means, first stop means engageable with the control link to locate the second pivot means in an outward over-center location relative to the first and second pivot means to thereby hold the door means in its closed position, and means connected to the control link for selectively moving the control link away from the stop means to open the door means and moving the control link toward the first stop means to close the door means, said means connected to the control link comprising a linkage, pivot means connecting the linkage to the control link, second stop means engageable with the linkage to hold the linkage in a fixed position locating the door means in the open position, said linkage including a first member pivotally connected to the control link and a second crank member, pivot means connecting the crank member to the first member, and means rotatably mounting the crank member on a part of the body, said crank member engageable with the second stop means to hold the pivot means in an over-center position relative to a line between the means mounting the crank member and the pivotal connection of the first member and control link thereby holding the door means in its open position.

3,961,661
HANGING AND STRETCHING DEVICE FOR WALL COVERING FABRICS

Gerard J. Tombu, 8, Rue des Bouchers, F-02 Saint-Quentin, France

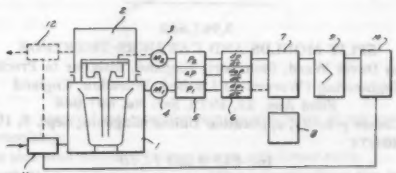
Filed Aug. 13, 1974, Ser. No. 497,077
Claims priority, application France, Aug. 2, 1974, 74.26919
Int. Cl.² A47H *23/00*
U.S. Cl. 160—328 **6 Claims**

1. Device for hanging and stretching wall covering fabrics, of the type comprising a combination of first sections fixed along the two lateral edges of a wall to be covered and each constituted by a sole-piece one side of which is substantially plane and the other side of which has three profiled ribs forming fastening elements, two of which delimit a first housing and one of these fastening elements and a third one of the fastening elements delimiting a second housing; second sections fixed along the two lateral edges of a first fabric and each constituted by a lath the two lengthwise edges of which are provided with a slot, the slots of each of said second sections co-operating with the respective fastening elements delimiting the first housing of a said first section in such a manner that this second section is secured in this first section, said first fabric being clamped at each lateral edge thereof between a fastening element of the first section and a lengthwise edge of the respective second section; and rods each inserted with the adjacent part of a second fabric in a said second housing.

3,961,662
METHOD FOR CONTROLLING THE RATE OF FILLING OF CASTING MOLDS

Angel Tonchev Balevski; Ivan Dimov Nikolov; Dragan Iliev Nenov, and Emil Nikolov Momchilov, all of Sofia, Bulgaria, assignors to Institut po Metaloznanie i Technologia na Metalite, Sofia, Bulgaria

Filed Aug. 12, 1974, Ser. No. 496,741
Claims priority, application Bulgaria, Aug. 16, 1973, 24336
Int. Cl.² B22D *27/14*
U.S. Cl. 164—4 **3 Claims**



1. A method of controlling the rate of filling of a casting mold wherein a pressure P_1 is applied to a chamber containing a vessel for the material to be cast, a pressure P_2 is applied to a chamber containing a casting mold, a casting mold being connected to the vessel by a tube for conducting the material

from said vessel into said mold at a rate determined by the pressure differential $\Delta P = P_1 - P_2$, said method comprising the steps of:

producing a first signal representing the time derivative of one of said pressures;

monitoring said first signal and controlling said one of said pressures to maintain the time derivative thereof substantially constant;

producing a second signal representing the time derivative of one of the parameters constituted by said pressure differential and the other of said pressures;

comparing said second signal with a set-point value in accordance with a predetermined program; and

controlling said other pressure in response to a signal representing the comparison of said second signal and said set-point value.

3,961,663

PROCESS OF EMPLOYING A SUBSTANCE IN PELLET FORM FOR NODULARIZING GRAPHITE IN LIQUID CAST IRON

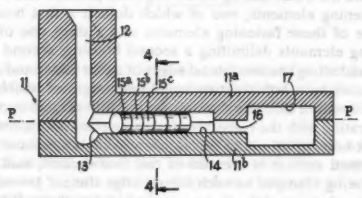
Michel Louis Degois, and Jean-Pierre Albert Maquaire, both of Point-a-Mousson, France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed May 28, 1974, Ser. No. 473,976

Claims priority, application France, May 28, 1973, 73.19340; May 9, 1974, 74.16090

Int. Cl.² B22D *27/20*

U.S. Cl. 164—58 **4 Claims**



1. A process for nodularizing graphite in molten cast iron which contains iron and a nodularizing agent which comprises pouring said molten cast iron in a mould and contacting said cast iron with a substance including pure iron and pure nodularizing agent in a powdered state and agglomerated together; said substance being in the form of pellets arranged in a plurality of groups of pellets whose nodularizing agent content varies from one group to the others, and said contacting step including placing at the upstream end of the path of the poured molten iron the group of pellets having the highest nodularizing agent content and placing in downstream sequence groups of pellets having a decreasing order of nodularizing agent content.

3,961,664

SPLIT MOULDS AND CARRIERS THEREFOR

John David Ward, Stourport, England, assignor to Precision Engineering (Worcester) Limited, Warndon, England

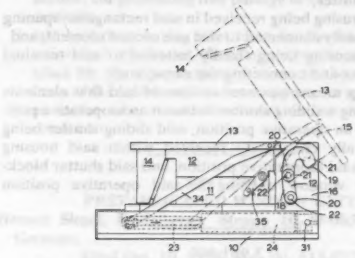
Filed Aug. 22, 1975, Ser. No. 607,044

Claims priority, application United Kingdom, Sept. 5, 1974, 38804/74

Int. Cl.² B22D *17/10*

U.S. Cl. 164—343 **5 Claims**

1. In a split mould having a base supporting a base mould part, a swinging arm carrying an upper mould part capable of being lowered on to the base mould part and of being raised and swung backwardly clear thereof for access to the base mould part and pin-and-slot hinging means located between said base and said arm clear of the mould parts and to the rear thereof, said hinging means comprising at each side of the mould two spaced parallel and laterally projecting pins or pin-mounted rollers fixed to said arm and a cooperating guide slot extending upwardly from said base, the two pins or pin-mounted rollers riding in the guide slot to define a desired closing and opening path of said arm and upper mould part,



the improvement comprising:

a. piston and cylinder means acting between the base and the swinging arm,

b. the piston and cylinder means being arranged to act generally horizontally with the cylinder attached to the base and the piston attached to a link adjacent one end thereof, the other end of the link being attached to the swinging arm.

3,961,665

APPARATUS FOR SEPARATING A PRODUCT OF SUBLIMATION FROM A GAS

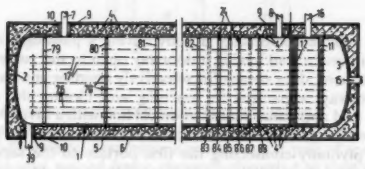
Johannes Langbroek, Egmand aan de Hoef, and Jan W. A. M. Koolen, Culemborg, both of Netherlands, assignors to Ultracentrifuge Nederland N.V., The Hague, Netherlands

Filed Oct. 8, 1974, Ser. No. 513,171

Claims priority, application Netherlands, Oct. 31, 1973, 7314937

Int. Cl.² B01D *7/00;* **F28F** *13/00*

U.S. Cl. 165—61 **8 Claims**



1. Apparatus for separating a product of sublimation from a gas in which this product is present in the form of a vapor, comprising

a. a housing, elongated in a generally horizontal dimension, and having an inner wall,

b. means surrounding said housing for maintaining said housing at a temperature above the melting point of the product of sublimation, said means including heat-exchanging means,

c. a gas inlet at one end of said housing,

d. a drain for removing a molten product of sublimation from said housing,

e. a gas outlet at the end of said housing opposite said gas inlet end, gas introduced at said gas inlet flowing in a path toward said gas outlet,

f. means for providing the precipitation of the product of sublimation in solid form while minimizing the opportunity for blockage of said gas path by precipitated solid, said means including (i) a plurality of cooling tubes of different lengths including tubes of longest and shortest length, (ii) means near the gas outlet end of said housing

for mounting said tubes generally parallel to the dimension of elongation of said housing and generally parallel to the path of said gas so that only the longest tubes extend to said gas inlet end of said housing and so that the tube density increases from said gas inlet toward said gas outlet, said mounting means including tube plates near the gas outlet end of said housing, and (iii) inlet and outlet means for a heatexchanging medium flowing in said tubes communicating with said tube plates and said tubes mounted thereby.

3,961,666

HEAT DISPERSION DEVICE FOR USE IN AN ELECTRONIC APPARATUS

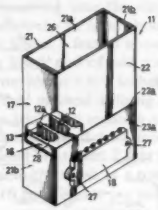
Tadao Suzuki, Tokyo; Hirohito Kawada, Chofu, and Yasuo Sugimoto, Musashino, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 20, 1973, Ser. No. 417,520

Claims priority, application Japan, Nov. 24, 1972, 47-135276; July 2, 1973, 48-78628

Int. Cl.² F24H *9/02*

U.S. Cl. 165—129 **11 Claims**



1. A heat dispersion device, comprising at least one heat dispersion member of heat conducting material including a first portion for receiving at least one heat-generating electronic element thereon and a second portion connected to said first portion and having at least one set of spaced apart fins defining channels therebetween which open at the top and bottom of said set of fins, said fins being positioned parallel to each other and uniformly spaced apart in the range between 5mm and 10mm; and at least one open ended duct having one end mounted on said second portion of said heat dispersion member and extending upwardly from said top of the set of fins in communication with said channels, a portion of said duct cooperating with said second portion of said heat dispersion member to define a conductive passageway for heated air to pass through said channels and through said duct for exhaust at the other end of the latter.

3,961,667

HYDRAULICALLY ACTUATED WIRE LINE APPARATUS

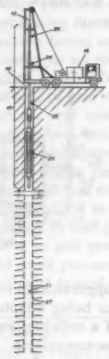
Neal L. Mitchell, Taft, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sept. 30, 1974, Ser. No. 510,260

Int. Cl.² E21B *33/127, 23/04*

U.S. Cl. 166—187 **9 Claims**

1. A wire line inflatable packer comprising an elongated body including a tubing section; means for connecting a wire line to the upper end of said elongated body; an elongated resilient sleeve positioned over at least a portion of said tubing section; means connecting the ends of said resilient sleeve in fluid-tight relationship with said tubing section to form an annular chamber between said tubing section and said resilient sleeve; port means providing a passageway for flowing fluid to said annular chamber; gas chamber means for storing high-pressure gas in said elongated body for use in inflating said resilient sleeve; pressure sink means forming a pressure sink for use in deflating said resilient sleeve; conduit means connected between said gas chamber means and said port means and between said port means and said pressure sink means for use in inflating and deflating said sleeve, valve means connected to said conduit means for selectively controlling flow of high-pressure gas between said port means and said gas chamber means through said conduit means to inflate said resilient sleeve and between said port means and said pressure sink means through said conduit means to deflate said resilient sleeve; and sequencing timer actuating means



connected to said valve means for sequentially operating said valve means after passage of a predeterminable time interval to first inflate said resilient sleeve and then after passage of a second predeterminable time interval to deflate said resilient sleeve, said sequencing timer actuating means comprising means defining an orifice, a supply of noncompressible liquid for flow through said orifice, means for driving said liquid through said orifice and operating means responsive to flow of said liquid through said orifice for operating said valve means.

3,961,668

CORRECTIONAL PAD

Robert A. Sirles, 2873 Mary St., Omaha, Nebr. 68112

Filed Jan. 31, 1974, Ser. No. 438,362

Int. Cl.² A01L *1/00*

U.S. Cl. 168—4 **7 Claims**

1. A correctional pad for use on the hoof of an animal, comprising,

a side wall member having upper and lower ends,

a bottom wall member extending laterally from the lower end of said side wall member,

said side wall member being comprised of a material which may be adhesively secured to the side of the animal's hoof,

said bottom wall member extending beneath the hoof in a preselected position to alter the flight of the animal's foot,

said side wall member having a length substantially less than the side wall of the hoof,

said bottom wall member having a length substantially less than the bottom of the hoof.

3,961,669

AUTOMOBILE FIRE FIGHTING APPARATUS

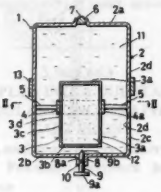
Mikio Kaneko, Toyoda, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Oct. 9, 1974, Ser. No. 513,235

Claims priority, application Japan, Dec. 6, 1973, 48-136627

Int. Cl.² A62C *35/12, 13/40*

U.S. Cl. 169—62 **10 Claims**



1. A fire fighting apparatus for installation on an automobile body, said apparatus being adapted for automatic operation upon application of a colliding impact onto said automobile body, said apparatus comprising:

an outer container made of a rigid material and comprising a cylindrical body closed by a pair of end walls at the opposite ends thereof, said outer container containing a fire fighting composition;

a first opening formed in one of said end walls of said outer container in a substantially coaxial relationship with said cylindrical body, said first opening defining an outwardly extending hollow projecting having a tapered construction which terminates in a nozzle for discharging said composition from said outer container;

a plug in said hollow projection, said plug being tapered complementarily to said hollow projection and normally keeping said nozzle closed, said plug being made of a material which is easily collapsible when subjected to an elevated pressure;

a second opening formed in the other of said end walls of said outer container in a substantially coaxial relationship with said cylindrical body, and defining an outwardly extending tubular projection;

an inner container containing a high pressure gas therein and encased in said outer container in a substantially coaxial relationship with said outer container, said inner container comprising a cylindrical body closed by a pair of end walls at the opposite ends thereof, said cylindrical body of said inner container being considerably smaller in diameter and length than said cylindrical body of said outer container, one of said end walls of said inner container being made of a fragile material at least in the central portion thereof and located close to said other end wall of said outer container;

an elongate plunger slidably received in said tubular projection, one end of said plunger being pointed and located in a destructively engageable relationship with said one end wall of said inner container, the other end of said plunger being located outside of said tubular projection and terminating in an enlarged head, said head being spaced apart from said tubular projection by a distance which permits said one end to plunge into destructive engagement with said one end wall of said inner container upon sliding movement of said plunger,

a hoop encircling said cylindrical body of said inner container for holding said inner container in a fixed position relative to said outer container;

a plurality of equally spaced, radially extending supporting bars each joined to said hoop at one end and said cylindrical body of said outer container at the other end, said bars cooperating with said hoop in supporting said inner container on said outer container; and

another hoop encircling said cylindrical body of said outer container for attaching said apparatus to a convenient portion of said automobile body.

3,961,670

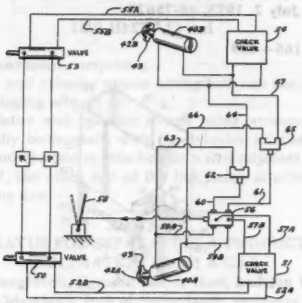
HYDRAULIC CONTROL SYSTEM FOR HYDRAULICALLY OPERATED ROAD GRADER

Theodore Rivinius, 810 N. 2nd St., Bismarck, N. Dak. 58501

Filed Mar. 13, 1975, Ser. No. 557,923

Int. Cl.² E02F *3/76*

U.S. Cl. 172—4.5 **3 Claims**

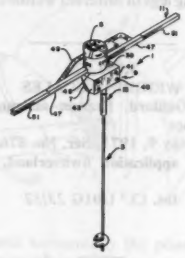


1. In combination with an earthworking machine having a pair of double acting cylinders each having a base end and a rod end providable with fluid under pressure for operating an earth working blade, and a separate control valve for each of said cylinders, each control valve having a pair of lines comprising selectively actuable first and second lines for operating the one of said double acting cylinders associated therewith, the improvement comprising a selector valve in fluid communication with the first and second lines of one of said control valves and to the cylinder associated therewith, said selector valve provided with means movable to a first position wherein said first and second lines are in fluid communication with the corresponding cylinder, and a second position wherein said first and second lines from said one control valve will be in fluid communication with separate outlet ports of said selector valve, a first flow integrator valve having a pair of first inlet ports and a first outlet port, said first outlet port being in fluid communication with one of said outlet ports of said selector valve, and said first inlet ports each being in fluid communication with the base end of a different one of said cylinders from the cylinder in fluid communication with the other of said first inlet ports, and a second flow integrator valve having a pair of second inlet ports and a second outlet port, and said second outlet port being in fluid communication with the other of said outlet ports of said selector valve and said second inlet ports being in fluid communication with the rod end of a different one of said cylinders from the cylinder in fluid communication with the other of said second inlet ports, said flow integrator valves each permitting parallel fluid flow in a direction from their respective outlet ports to their respective inlet ports, but preventing substantially dissimilar fluid flow from each of the respective inlet ports to their respective outlet port whereby said flow integrator valves meter the exhaust flows from both of said double acting cylinders to insure equal exhaust flows, and permit parallel operation of said cylinders with substantially equal movement thereof.

3,961,671
EARTH ANCHOR DRIVE PROCESS

James R. Adams, 1125 E. Vandiver, and James K. Adams, Rte. No. 10, both of Columbia, Mo. 65201

Filed Sept. 3, 1974, Ser. No. 502,982
Int. Cl.² E02D 7/22, 5/80
U.S. Cl. 173—1 11 Claims

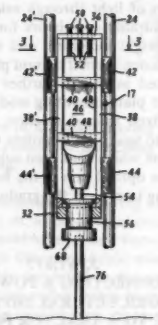


1. A method of inserting into the earth an earth anchor having a rod with a diameter of from about ½ to about ¾ inch and a length of from about 3 feet to about 5 feet, and having toward the normally lower end of said rod a single turn helix with a diameter of from about 4 to 8 inches and a pitch of from about 1 to 3 inches, said method utilizing a hand-held electric motor-powered drive tool, said method comprising forming a driving connection between said drive tool and the upper end of said rod at a distance of at least 2 feet from said helix, and driving said anchor into the earth at a rotational speed which at no time exceeds 10 revolutions per minute.

3,961,672
IMPACT HAMMER POST DRIVER

John H. Welsch, Dunmore, and Edward J. Sparrow, Blakely, both of Pa., assignors to Sterling Engineering and Manufacturing Company, Wilkes-Barre, Pa.

Filed Nov. 13, 1974, Ser. No. 523,260
Int. Cl.² E04H 17/26
U.S. Cl. 173—43 17 Claims

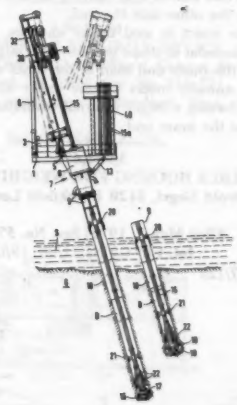


1. A fluid impulse post-driving apparatus comprising
a. a tower;
b. at least one fluid reservoir;
c. a fluid-pressure actuated impact hammer having a fluid chamber therein and operating fluid in said chamber;
d. means for positioning said hammer in line with a post to be driven;
e. a cage for retaining said hammer therein;
f. advancing means having a first and a second end, said first end secured to said tower and said second end secured to said cage wherein said advancing means is adapted to move said cage longitudinally toward and away from said post after said hammer has been positioned by said positioning means;
g. fluid pressure operated means for applying and maintaining static pressure on said post while it is being driven, said static pressure means being capable of applying static pressure to said post only through said hammer;
h. a shank, moveable with respect to said hammer, intervening said hammer and said post and positioned to transmit force from said fluid chamber within said hammer to said post;
i. fluid-pressure generating means communicating with said fluid chamber;
j. fluid-pressure impulse generating means for creating intermittent fluid pressure pulses in said operating fluid, said pressure pulses producing downward forces on said shank and upward reaction forces on said hammer;
k. resilient means positioned to receive and store energy from said reaction forces, said resilient means engaging said hammer for redelivery of said stored energy to said post through said hammer and said shank, during the period between pressure pulses; and
l. anvil means alignable with and intervening said post and said shank and including means for maintaining alignment between said shank and said post, said anvil means being constructed and positioned to transmit said downward force from said shank to said post when said static pressure is being applied to said post, said construction and positioning of said anvil preventing transmission of upward forces from said post to said cage except through said resilient means.

3,961,673
DRILLING APPARATUS

Jakob Wolters, Wegberg-Beeck, and Josef Classen, Heinsberg-Horst, both of Germany, assignors to Maschinen- und Bohrgerate-Fabrik Alfred Wirth & Co., K.G., Erkelenz, Germany

Filed Mar. 24, 1975, Ser. No. 561,160
Claims priority, application Germany, Apr. 2, 1974, 11496[U]
Int. Cl.² E21B 19/14
U.S. Cl. 175—52 9 Claims



1. A drilling apparatus comprising a frame structure, a mast, a pivoting axis and a support means having an adjustable length operably related to the frame structure and mast for connecting the mast to the frame structure, the mast being angularly adjustable relative to the frame structure about the pivoting axis by adjusting the length of the support means, a drill string extending along the mast, drive means for rotating the drill string, a support having an opening for the passage of the drill string, the support being pivotally connected to the frame structure, adjustable connecting means between the support and frame structure by which the support is angularly

adjustable relative to the frame structure by adjusting the length of the connecting means, the support having a lower part defined by a tube-like member for mounting on the upper end of a stationary pipe,

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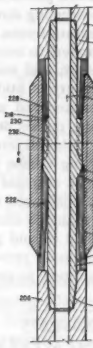
3,961,674

DIRECTIONAL DRILLING SYSTEM

James T. Craig, Jr., Bixby, and Arthur Park, Tulsa, both of Okla., assignors to Standard Oil Company, Chicago, Ill.

Filed July 11, 1974, Ser. No. 487,482
Int. Cl.² E21B 7/10
U.S. Cl. 175—325 6 Claims



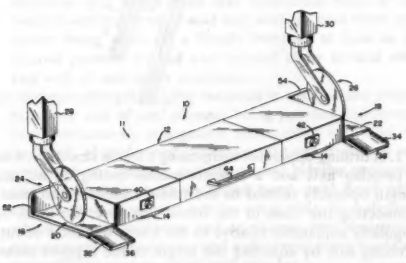
1. A stabilizer for use in a string of drill pipe which includes:
an inner hollow mandrel having an enlarged bearing section on the outer surface intermediate the ends thereof;
a hollow blade element housing surrounding said mandrel, the inner diameter of said housing being about equal to the diameter of said bearing section of said mandrel so as to form an upper annulus between the mandrel and housing on one side of said bearing section and a lower annulus on the other side thereof;
an upper insert in said upper annulus, said upper insert being annular in shape and having a larger internal diameter at the outer end than at the inner end; and
a lower annular insert in said lower annulus, said lower insert having a larger internal diameter at the outer end than at the inner end.

3,961,675

PORTABLE HOUSING FOR WEIGHING SYSTEMS

Vernon Harold Siegel, 5120 Brookfield Lane, Clarence, N.Y. 14031

Filed May 1, 1975, Ser. No. 573,455
Int. Cl.² G01G 21/00, 19/00
U.S. Cl. 177/126 6 Claims



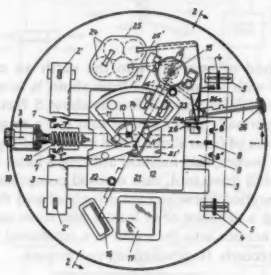
1. A portable housing for a weighing system for monitoring the weight of a non-ambulatory patient, said housing comprising: an elongated, box-like apparatus having a central section and two end sections; each of said end sections containing at least one operatively positioned weight responsive element, and being further formed to provide a receptacle for the terminal portion of the leg of a bed and having associated therewith an entrance for said terminal portion and means for releasably restraining said terminal portion therein, said end sections being adjustable toward and away from one another whereby beds having legs of different widths can be accommodated.

3,961,676

WEIGHING SCALES

Marc Terraillon, Gaillard, France, assignor to Terraillon, Annemasse, France

Filed May 9, 1975, Ser. No. 576,300
Claims priority, application Switzerland, May 24, 1974, 7196/74
Int. Cl.² G01G 23/32
U.S. Cl. 177—178 7 Claims



1. A weighing scales comprising a base and a platform adapted to receive a person to be weighed, means carried by said base both for supporting said platform and for translating movement of said platform relative to said base to movement of a graduated scale formed by a transparency carrying weight indicia, and an optical system including a light source for projecting a beam of light through said graduations of said transparency, a plurality of mirrors for reflecting an illuminated image of weight indicium, and a translucent window provided with an index carried by said platform, said weighing scales characterized in that it further comprises a support plate, said support plate mounting said light source and said transparency in fixed spaced relation thereto, said support plate being fixed to said base at points within a plane aligned along a straight line which is at least substantially parallel and in proximity to the optical axis of the beam of light from said light source serving to project the graduations onto said translucent window.

3,961,677

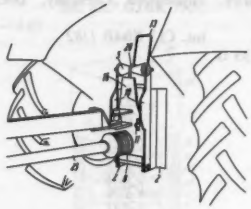
DEVICE FOR CONNECTING A POWER TRANSMISSION SHAFT OF AN AGRICULTURAL IMPLEMENT, MACHINE OR THE LIKE TO A TRACTOR POWER TAKE-OFF SHAFT

Hubert Geisthoff, Lohmar, Donrath, Germany, assignor to Jean Walterscheid GmbH, Lohmar, Rhineland, Germany

Division of Ser. No. 401,863, Sept. 28, 1973, Pat. No. 3,847,415. This application Sept. 9, 1974, Ser. No. 504,113
Claims priority, application Germany, Sept. 29, 1973, 2247903
Int. Cl.² B60D 1/00
U.S. Cl. 180—14 B 6 Claims

1. In a device for connecting a power transmission shaft on an agricultural implement and the like to a power take-off shaft of a tractor vehicle, the combination of a catch bar pivotally mounted on the rear of a tractor vehicle, an inwardly

tapered alignment roller on said catch bar, a coupling plate mounted on the implement to be connected, an aligning hook on said coupling plate having an opening engageable with said catch bar inwardly tapered alignment roller and shaped to



align vertically and horizontally the plate and transmission shaft with the power take-off shaft, and mutually engageable means on said tractor power take-off shaft and said power transmission shaft for coupling said shafts in the vicinity of said coupling plate.

3,961,678

SIMPLE ELECTRIC BICYCLE

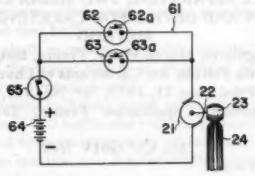
Yukio Hirano, and Akio Iwata, both of Kiryu, Japan, assignors to Mitsubadenkiseisakusho Company, Ltd., Kiryu, Japan

Filed Aug. 22, 1974, Ser. No. 499,635

Claims priority, application Japan, Sept. 11, 1973, 48-101651

Int. Cl.² B62D 61/02; B60K 17/00; B62M 7/08

U.S. Cl. 180—33 D 7 Claims



1. In the combination of a bicycle having a frame and two wheels and an electric motor for propelling said bicycle, the improvement comprising:

a swing arm;

means for pivotally mounting said swing arm at one end to said bicycle frame at a position above the uppermost portion of one of said wheels and forward of a vertical line passing through the axle of said wheel;

a drive roller rotatably mounted to the other end of said swing arm, said drive roller being in contact with said wheel and driven by said electric motor;

said mounting means, when the drive roller is in contact with said wheel, positioning said swing arm relative to said wheel to form an angle whereby the radial force applied by the drive wheel is a function of the driving force of said electric motor; and

an electrical circuit including a pair of switches attached to said bicycle at two spaced locations, a power switch and a power supply, said pair of switches are in parallel with each other and in series with said power switch, said electric motor and said power supply, said pair of parallel switches being located on the right and left portions of a handlebar of said bicycle respectively such that actuation of said electric motor may be controlled from at least two spaced locations.

3,961,679

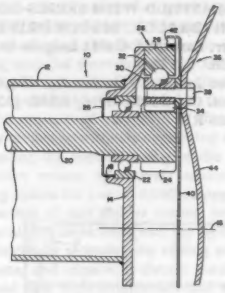
VEHICLE FINAL DRIVE AND WHEEL MOUNTING

Mahlon Lloyd Love, Osco, Ill., assignor to Deere & Company, Moline, Ill.

Filed Feb. 27, 1975, Ser. No. 553,890

Int. Cl.² B60K 17/04

U.S. Cl. 180—75 8 Claims



1. A vehicle final drive and wheel mounting comprising: a nonrotatable axle housing structure connected to the vehicle; a single annular bearing having coaxial annular inner and outer races, and a plurality of bearing elements between the inner and outer races providing relative rotation between the races; and annular internal ring gear having a smaller diameter than and coaxially disposed within the bearing inner race; means coaxially attaching the wheel to one of the bearing races; means connecting the other bearing race to the axle housing structure; a drive shaft journaled for rotation relative to the axle housing structure; and gear means drivingly connecting the drive shaft to the internal ring gear to drive the wheel at a lower speed than the drive shaft.

3,961,680

AUTOMOBILE SECURITY DEVICE

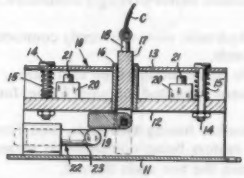
Marcel Miescher, 9 rue du Vieux-Billard, Geneva, Switzerland

Filed Sept. 30, 1974, Ser. No. 510,721

Claims priority, application Switzerland, Sept. 28, 1973, 13984/73

Int. Cl.² B60R 21/10

U.S. Cl. 180—82 C 4 Claims



1. In an automobile vehicle provided with at least one safety belt, a security device comprising:

a. an attachment piece secured to an end of the belt, said attachment piece having a pivotally movable catch thereon;

b. a casing fixed in the vehicle, said casing including means defining an opening removably receiving said attachment piece and said pivotally movable catch;

c. a member movably mounted in said casing;

d. spring means opposing said movement of the member;

e. means for normally holding said catch in a fixed position, relative to said member, to lock said attachment piece in

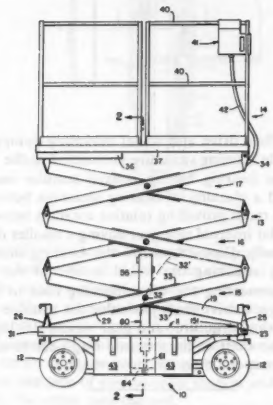
said casing; and means for releasing said holding means in response to movement of said member by an amount corresponding to a given traction in the belt and after a given delay whereby said catch may pivot on said attachment piece for withdrawal thereof through said opening.

3,961,681

MOBILE SCAFFOLD WITH SERIES-CONNECTED HYDRAULIC MOTOR DRIVE

Robert E. Fisher, Larkspur, Calif., assignor to Up-Right, Inc., Berkeley, Calif.

Filed July 1, 1974, Ser. No. 484,811
Int. Cl.² B60K *41/16*; E04G *1/24*
U.S. Cl. 180—66 R **8 Claims**



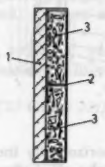
1. A mobile device comprising:
a. a generally rectangular frame,
b. a plurality of ground-engaging wheels mounted on said frame,
c. a first hydraulic motor drivingly connected to one of said wheels,
d. a second hydraulic motor drivingly connected to another of said wheels,
e. a hydraulic pump mounted on said frame,
f. power means mounted on said frame for driving said pump,
g. a fluid conduit having two ends, said first and second hydraulic motors being connected in series in said conduit between the two ends thereof,
h. means including a valve for connecting said pump to said conduit to enable fluid under pressure from said pump to flow through said conduit, said valve having a first position connecting the output of said pump to one end of said conduit and a second position blocking flow of fluid through said conduit,
i. means forming a bypass passage connected at its ends to the ends of said conduit whereby both of said motors are bypassed, said bypass passage having a flow restrictor therein,
j. bypass valve means in said bypass passage having an open position allowing fluid to flow through said bypass passage and a closed position preventing fluid flow through said bypass passage.

3,961,682

SOUND-ABSORBING WALL ELEMENT

Gerd Dausch, Wuppertal, and Heinrich Klotz, Westhofen, both of Germany, assignors to Hermann Hemscheidt Maschinenfabrik, Germany

Filed Nov. 29, 1974, Ser. No. 528,543
Claims priority, application Germany, Dec. 5, 1973, 2360519
Int. Cl.² E04B *1/82*
U.S. Cl. 181—33 G **4 Claims**



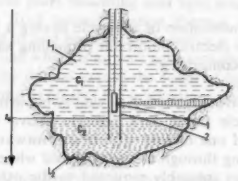
1. In an open air sound-absorbing wall, a sound-absorbing wall element adapted to absorb air-borne sound, said element being composed of shreds of disintegrated reinforced pneumatic rubber tires, said shreds being bonded together to form an irregular weather-resistant panel structure having irregular pores, a majority of said shreds being of a length between 3 and 30 millimeters, said wall element containing a volume of said shreds which is not more than 60% of the volume of the wall element and having a density of less than 0.6 grams per cubic centimeter.

3,961,683

METHOD FOR DETERMINING THE SHAPE OF AN UNDERGROUND CAVITY AND THE POSITION OF THE SURFACE SEPARATING TWO MEDIA CONTAINED THEREIN AND DEVICE FOR CARRYING OUT SAID METHOD

Robert Delignieres, Mareil-Marly, France, assignor to Institut Francais du Petrole, des Carburants et Lubrifiants, France

Filed June 21, 1973, Ser. No. 371,962
Claims priority, application France, June 22, 1972, 72.22694
Int. Cl.² G01V *1/40*
U.S. Cl. 181—102 **15 Claims**



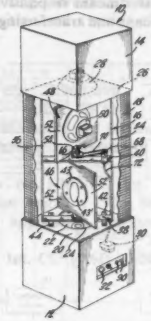
1. A device for determining the shape of a cavity containing at least one substance comprising:
a. means for transmitting a sequence of acoustic pulses along each of successive transmission axes from reference locations within the cavity in the direction of places of the wall of said cavity;
b. means for detecting echoes of the acoustic pulses received along each of said transmission axes between the transmission of any two acoustic pulses of the sequence;
c. means for selecting a plurality of echoes within a propagation time interval between two successive transmissions and substantially unchanged for each of the acoustic pulses transmitted along each of said axes; and
d. means for measuring the average propagation time interval of the selected echoes.

3,961,684

OMNI-DIRECTIONAL SOUND SYSTEM

Stanley H. Michael, Miami, Fla.; Hans J. Weilandt, Clark, and Ralph R. Soupe, Little Falls, both of N.J., assignors to Turnsound Corporation, Maplewood, N.J.

Filed May 23, 1974, Ser. No. 473,089
Int. Cl.² G10K 7/00
U.S. Cl. 181—143 5 Claims



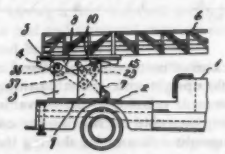
1. A turnable speaker system comprising,
a. frame means,
b. a speaker-baffle assembly including (1) a basket speaker, (2) a first baffle, for reflecting sound, external to and coupled to said speaker, and (3) a second baffle with at least one opening mounted to the front face of said speaker; said first baffle being arranged generally parallel to and near the front face of said speaker; said first baffle having an aperture within which an outer portion of said speaker is seated; said speaker-baffle assembly having a center of gravity within said speaker at a location rearward of said first baffle;
c. a pair of shaft members rotatably coupled in spaced relation to the frame means in alignment with one another to form a rotation axis;
d. mounting means including a pair of brackets mounted to the rear of said first baffle and extending rearward thereof and coupled to respective ones of said shaft members such that the rotation axis is substantially aligned through said center of gravity.

3,961,685

LADDER WORKING LIMIT BASED LADDER STOPPING DEVICE FOR AERIAL LADDER TRUCK

Tetsuo Kozai, Osaka, Japan, assignor to Morita Pump Kabushiki Kaisha, Osaka, Japan

Filed Dec. 23, 1974, Ser. No. 536,036
Int. Cl.² B66F 11/04
U.S. Cl. 182—19 4 Claims



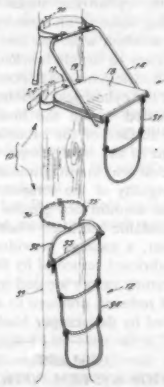
1. In an aerial ladder truck assembly having a turntable unit mounted on the rear portion of the truck, a ladder support pillar unit mounted on the turntable unit, a ladder support frame unit pivotally mounted on the ladder support pillar unit, ladder means mounted on the ladder support frame unit, hydraulic cylinder means operatively positioned between the ladder support pillar unit and the ladder support frame unit to vertically swing the ladder means, operating lever means for actuating said hydraulic cylinder means, drum means to extend and contract the ladder means, hydraulic driving means for actuating the drum means, operating lever means for actuating said hydraulic driving means, hydraulic pump means for actuating the hydraulic cylinder means and the hydraulic driving means, and control means for operating said hydraulic cylinder means and said hydraulic driving means respectively, the improvement of a safety mechanism for preventing the vertical swinging and the extension of the ladder means beyond safe working limits, said safety mechanism including first indicator means operatively connected with the ladder means for indicating the amount of extension of the ladder means, second indicator means operatively connected with the ladder means for indicating the vertical swing of the ladder means, first solenoid valve means operatively associated with the hydraulic driving means for automatically stopping the extension and contraction of said ladder means, second solenoid valve means operatively associated with the hydraulic cylinder means for automatically stopping the raising and lowering of said ladder means, and electrical circuit means operatively connected to said first indicator means and to said second indicator means on the one side and to said first solenoid means and said second solenoid means on the other side, said electrical circuit means including switching means whereby when said ladder means reaches a maximum safe extension point at the particular vertical inclination angle of the ladder means as indicated by said first indicator means and said second indicator means, said switching means of said electrical circuit means will energize said first and second solenoid means to prevent any further movement of the ladder means beyond the safe point of the ladder means.

3,961,686

EASY-UP TREE STAND

Isaac R. Starkey, 205 W. Sugar Tree St., Wilmington, Ohio 45177

Filed Apr. 18, 1973, Ser. No. 352,172
Int. Cl. A47c 9/10; E06c 1/56
U.S. Cl. 182—187 1 Claim



1. In an easy-up tree stand, the combination of a seat unit attached to a higher part of a tree trunk, and a ladder unit attached therebelow to a lower part of said tree trunk, said seat unit comprising a pair of U-shaped frames attached pivotally together, one frame having a seat panel attached thereupon and a cushion or pad attached on said panel, a depending rope ladder attached to said panel, spurs attached to each frame, and straps attached along an intermediate leg of said U-shaped frame and securable around said tree trunk, each said U-shaped frame having a pair of said spurs in spaced apart

relation along said intermediate leg of said U-shaped frame, said spurs being tapered, said ladder unit comprising a bowed frame and a straight rod rigidly attached together at their ends, a rope ladder attached thereto, and a pair of chains attached to said bowed frame, the other ends of said chains being adjustably attached together by a bolt, nut and washer assembly.

3,961,687

LUBRICATION OF ROTATABLE MEMBERS

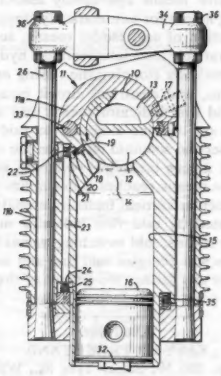
Michael Ellison Cross, 52 Bloomfield Ave., and Albert Edward Coles, 366 Bloom Road, both of Bath, England

Filed Sept. 6, 1974, Ser. No. 504,686

Claims priority, application United Kingdom, Sept. 7, 1973, 42107/73

Int. Cl.² F01M 9/10

U.S. Cl. 184—6.9 **5 Claims**



1. An assembly for removing excess lubricant from a rotatably mounted cylindrical valve member comprising a housing, a cylindrical member rotatably mounted within the housing, a recess formed in the cylindrical surface of the cylindrical member, the housing defining an opening which comes into and out of communication with the said recess as the valve member rotates, means to supply lubricant to the cylindrical member within the housing, means to remove excess lubricant from the surface of the cylindrical member comprising a rigid scraper blade mounted within the housing and resiliently biased towards the surface of the rotatable cylindrical member, the axial extent of the rigid scraper blade being greater than that of the recess and the magnitude of the resilient bias coupled with the rigidity of the scraper deforming the rigid scraper blade by an amount not greater than 1/3000 of the diameter of the rotatable member when the recess and the blade are in register, a passage provided in the housing to allow draining of lubricant removed by the scraper blade and one or more non-return valves located in the said passage to produce an area of reduced pressure to assist in the draining of lubricant removed by the scraper blade.

3,961,688

TRANSPORTATION SYSTEM WITH MALFUNCTION MONITOR

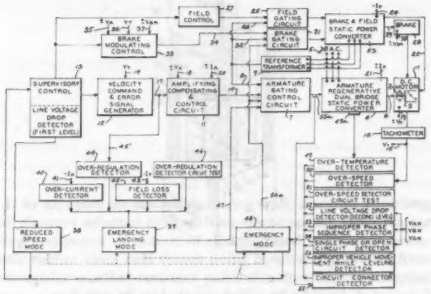
John T. Maynard, New Berlin, Wis., assignor to Armor Elevator Company, Louisville, Ky.

Filed Apr. 29, 1974, Ser. No. 465,271

Int. Cl.² B66B 5/02

U.S. Cl. 187—29 R **218 Claims**

1. A transportation system for a structure having a plurality of spaced landings comprising a transport vehicle, means mounting said vehicle for movement relative to said structure in a path extending adjacent each of said landings, motive means moving said vehicle relative to the structure, braking means selectively permitting vehicle movement and retarding movement and retaining said vehicle in a stopped position with respect to said structure, control means connected to a source of energy and cooperating with said motive means and said braking means and controlling movement of said vehicle relative to the structure and stopping said vehicle at a selected landing, said control means having a plurality of modes of operation controlling the movement of said vehicle, means monitoring one or more malfunctions within said transportation system, and transfer means responsive to the functioning of said monitoring means and transferring said control means



from one of said modes of operation to another of said modes of operation, said plurality of modes including a first mode of operation operating said vehicle and providing normal service between a plurality of landings and a second mode of operation established in response to a malfunction sensed within said transportation system rendering said motive means essentially inoperative for supplying a driving force to said vehicle and automatically operating said braking means as essentially the sole control for guiding said transport vehicle to one of said landings.

3,961,689

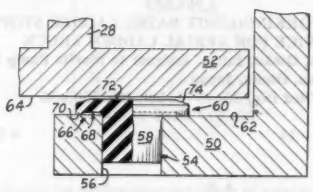
SPACER AND NOISE SUPPRESSOR CUSHIONS FOR LIFT TRUCK MAST UNITS

Edward V. Leskovec, Eastlake, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Apr. 18, 1975, Ser. No. 569,513

Int. Cl.² B66B 7/02

U.S. Cl. 187—95 **4 Claims**



1. In a lift truck mast unit including a fixed upright unit, at least one movable upright unit and a carriage arranged for longitudinal movement relative to the movable upright unit, motor means being operable for moving the carriage relative to the movable upright unit and for shifting the movable upright unit relative to the fixed upright unit, the movable upright unit including a pair of flanged structural beams arranged in spaced-apart relation, the fixed upright unit also including structural beams having flanges arranged in facing relation to the flanges of the movable upright beams, a plurality of spacer and noise suppressor cushions arranged upon the flanges of either the movable upright beams or the fixed upright beams, each spacer and noise suppressor cushion comprising an elastomeric body including a reduced diameter

portion secured within a bore formed by one flange, the elastomeric body including another portion having a diameter substantially larger than the bore for arrangement between the one flange and the facing flange, the larger diameter portion of the elastomeric body having an annular surface abutting the one flange about its bore, the annular surface of the elastomeric body portion being circumferentially undercut to form a peripheral rim normally in contact with the surface of the one flange, the larger diameter portion of the elastomeric body thereby exhibiting increased resilience due both to its elastomeric composition and a spring effect due to its undercut configuration.

3,961,690
DISC BRAKE

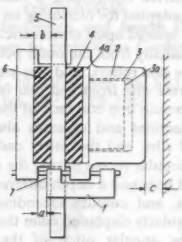
Johannes Schanz, Offenbach, and Jochen Burgdorf, Bad Homburg, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 530,314, Dec. 6, 1974, abandoned. This application Aug. 11, 1975, Ser. No. 603,850

Claims priority, application Germany, Feb. 20, 1974, 2408075

Int. Cl.² F16D *66/00*

U.S. Cl. 188—1 A **6 Claims**



1. A disc brake comprising:
a brake disc rotatable in a given plane;
a stationary brake carrier;
a floating caliper embracing said disc and slideably guided by said carrier in transverse moveable relationship to said given plane;
a brake cylinder having a working piston supported by said caliper;
a first brake pad supported at and actuated by said working piston, said first pad being disposed in a parallel relation to said given plane;
a second brake pad supported by said caliper on a side of said disc remote from said cylinder, said second pad being disposed in a parallel relation to said given plane;
a stationary stop carried by said carrier to limit the maximum shifting travel of said caliper to a given distance when said caliper abuts said stop, said given distance being less than the thickness of said second pad;
said caliper having a first outward projection adjacent said first brake pad and a second outward projection adjacent said second brake pad;
said carrier having a U-shape with first and second legs extending toward said caliper and embracing said first projection, said first leg being disposed adjacent said brake cylinder and spaced from said first projection and said second leg being disposed between and spaced from said first and second projections, said second leg carrying said stop on a surface thereof parallel to and adjacent said second projection and being spaced from said second projection said given distance; and
a stationary rod extending through the ends of said first and second projections and the ends of said first and second legs to assist in slideably guiding said caliper.

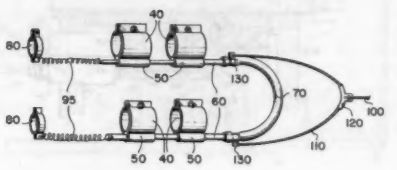
3,961,691
EMERGENCY BICYCLE BRAKE

Shuck Tong Eng, Corona, N.Y., assignor to The Raymond Lee Organization, Inc., a part interest

Filed Apr. 28, 1975, Ser. No. 572,180

Int. Cl.² B62L *1/02, 3/06*

U.S. Cl. 188—24 **2 Claims**



1. An emergency brake for bicycles, comprising:
a semicircular member slidably attached to the frame of the bicycle to be slidable forwardly and rearwardly in a horizontal plane, the member being located directly forwardly of the rear wheel with the free ends of the member extending rearwardly:
a spring urging the member rearwardly to press against the rear wheel; and
lock means for holding the member in its forwardmost position when the lock means is locked, and leaving the member free to slide when the lock means is unlocked;
said lock means including a trigger means and a reset means, the reset means allowing the member to be pulled forwardly and locked in its forwardmost position after being released to press against the rear wheel, the trigger means cooperating with the reset means to allow the reset means to release the member when the trigger means is operated, said reset means including a cylindrical spool having an axial bore upon which a cable attached to the member can be wrapped, an axle fixed to the bicycle frame extending through the bore to allow the spool to rotate about its axis, a lever attached to the spool for rotating the spool, a notched disc attached to the spool, and a springloaded movable pawl normally engaging the notch in the disc to prevent the spool's rotation unless the pawl is disengaged; and
a flexible bicycle handbrake cable interconnecting the trigger means, reset means and said member, and wrapped on the spool.

3,961,692
VARIABLE TORQUE ELECTRIC CLUTCH AND BRAKE

Ray L. Marquis, Blookfield, and Frank H. Beckman, New Britain, both of Conn., assignors to Kalart Victor Corporation, Plainville, Conn.

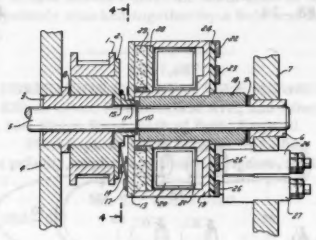
Filed Nov. 1, 1974, Ser. No. 519,829

Int. Cl.² F16D *19/00*

U.S. Cl. 192—84 A **9 Claims**

1. A magnetic clutch having a rotary power input structure comprising a flat, annular plate, and an output structure comprising two coplanar, spaced apart non-resilient friction surfaces and a third planar, lubricant impregnated resilient friction surface located between said two coplanar surfaces, and magnetic flux generating means within said output structure,

said plate and said friction surfaces of said output structure being coaxial and juxtapositioned so that the plate is drawn



against the output structure when a magnetic flux is applied to the plate.

3,961,693

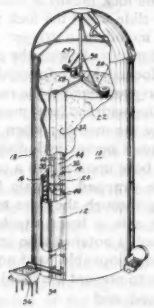
INVERTED SILO CHUTES HAVING SWINGABLE SIDE WALL PANELS

George B. Bruecker, Rte. 1, Greenleaf, Wis. 54126

Filed Apr. 9, 1975, Ser. No. 566,593

Int. Cl.² B65G 11/02

U.S. Cl. 193—14 **7 Claims**



1. In a silo having a wall and having an upright opening in said wall, an inverted chute projecting inwardly in said silo in registration with said upright opening, the improvement wherein said chute includes at least one upright series of swingable panels each having inner and outer edges, each panel being hingedly connected along its outer edge to a side of said upright opening for independent swinging movement from a position projecting inwardly of the silo to form part of the chute to a position where it serves as a continuation of the silo wall to close part of said opening, and readily removable connecting means releasably holding said swingable panels in said position where they project inwardly of the silo, said panels being swingable to non-projecting position with respect to the interior of the silo and being sized and positioned to each close part of said opening when swung toward said opening on the hinge connections after said removable connecting means has been released.

3,961,694

ROLLER DEVICE

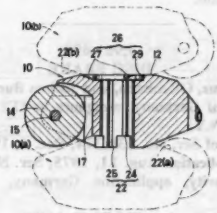
Masahiro Murakami, 28-21 Oimazato 2-chome, Higashinari, Osaka, Japan

Continuation of Ser. No. 321,309, Jan. 5, 1973, Pat. No. 3,878,927. This application Jan. 31, 1975, Ser. No. 545,908

Claims priority, application Japan, Feb. 22, 1972, 47-18812

Int. Cl.² B65G 39/04

U.S. Cl. 193—37 **1 Claim**



1. A roller device comprising a main body, including a cylindrical boss adapted for mounting on a shaft, a plurality of rollers rotatably spaced apart concentrically around said boss, ribs extending radially from the outer periphery of the boss to rotatably receive said rollers, said ribs branching into a plurality of support arms with front and rear faces at the end opposite the boss, wherein one end face of the boss is formed with tonguelike projections and recesses alternately adjacent to said rollers and ribs, and the other end face of the boss is formed with a circular recess having the same diameter as the diameter of said boss and a depth different from height of the said projections, and cutouts extending from said circular recess being angularly displaced from the ribs on the one face by one half the angular pitch of the roller arrangement wherein two said roller devices may be coupled together by placing the projections of one of said roller devices into the circular recess or the recesses of the other of said roller devices whereby the rollers of said one device are displaced by one half of the angular pitch of the roller placement of said other devices.

3,961,695

MANUALLY ACTIVATED APPARATUS FOR TIMING INTERVALS OF DIFFERENT MAGNITUDE

Ortwin Woköck, Schwenningen, and Bernhard Kaiser, Villingen, both of Germany, assignors to Kienzle Apparate GmbH, Villingen, Germany

Filed May 9, 1974, Ser. No. 468,446

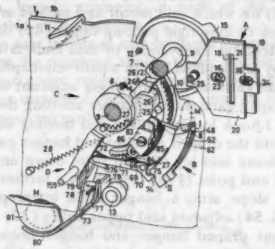
Claims priority, application Germany, May 10, 1973, 2323567

Int. Cl.² G07F 17/24

U.S. Cl. 194—83 **7 Claims**

1. In an apparatus for timing intervals of varying magnitude, particularly in a parking meter, a combination comprising manually operable first means which is continually biased to a starting position and turnable from the same to an operating position; second means associated with said first means and operative for receiving a coin, and for determining the value of the coin in response to turning of said first means towards said operating position; third means operatively connected with said first and second means for presetting, during turning of said first means to said operating position, a time interval of a magnitude which depends upon the coin value determined by said second means; fourth means operatively connected with said first and third means for indicating the magnitude of the preset time interval in response to returning of said first means to said starting position thereof, wherein said fourth means is movable between a null position and a plural-

ity of time-interval indicating positions; and further comprising means for moving said fourth means to said null position



in response to turning of said first means from said starting position to said operating position thereof.

3,961,696

DEVICE FOR MAKING A CULTURE OF CO_2 REQUIRING ORGANISMS

Betty Anne Bowie, Havertown, and Joseph F. Pagano, Paoli, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Oct. 20, 1975, Ser. No. 623,936
Int. Cl.² C12B 1/02
U.S. Cl. 195—139 6 Claims

1. A device for making a culture of micro-organisms comprising:
an elongated member,
a culture medium for culturing CO_2 requiring organisms supported by said member,
a container for the elongated member having an open end,
means to seal the open end of the container, and
means to secure a CO_2 tablet to said elongated member between the culture medium and the open end of the container with the tablet exposed to the atmosphere within the container.

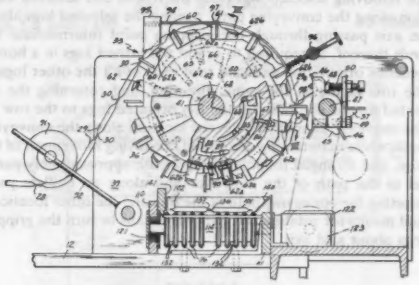
3,961,697

APPARATUS FOR SHINGLING AND PACKING OF ARTICLES

Donn A. Hartman, Zion, and Charles E. Cloud, Wilmette, both of Ill., assignors to R. A. Jones & Company Inc., Covington, Ky.

Filed Mar. 20, 1974, Ser. No. 452,798
Int. Cl.² B65G 47/00
U.S. Cl. 198—25 18 Claims

18. Apparatus for orienting pouches comprising,
an indexing wheel having a plurality of suction heads spaced around its periphery,
means for rotating said wheel,
a conveyor passing below and at right angles to the rotary path of said wheel,
means for applying vacuum to said heads to grasp individual pouches,



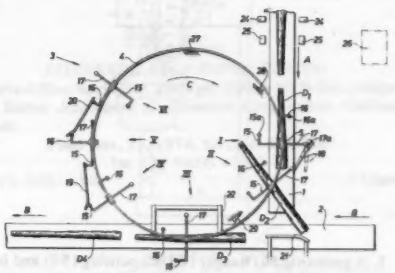
and means for releasing said vacuum at different predetermined angular positions of said wheel to cause said heads to release said pouches onto said conveyor to form a plurality of rows of pouches on said conveyor.

3,961,698

METHOD AND APPARATUS FOR TURNING LOGS

Gösta Ahlenius, Domsjoverken, and Ake Svensson, Sjalevad, both of Sweden, assignors to Mo och Domsjo AB, Ornskoldsvik, Sweden

Continuation-in-part of Ser. No. 381,293, July 20, 1973, abandoned. This application Dec. 26, 1974, Ser. No. 536,686
Claims priority, application Sweden, July 31, 1972, 9968/72
Int. Cl.² B65G 49/00
U.S. Cl. 198—25 22 Claims



1. A process for orienting logs having a root end and a crown end and arranged in a row so that all the logs in the row have their roots ends pointing in the same direction, which comprises arranging the logs in a row in a heterogeneous orientation; conveying the logs along a first conveying path; at a selected location along the first conveying path, gripping selected logs in sequence at approximately their mid-point intermediate the root and crown ends of the logs in a manner to permit turning them; and turning selected gripped logs about an axis passing through the gripping point intermediate the root and crown ends of the logs, as required to orient the logs in a homogeneous orientation with the root ends of all logs in the rows facing in the same direction, while maintaining continued conveying movement of the logs; and transferring the homogeneously oriented logs to and conveying the homogeneously oriented logs along a second conveying path.

12. An apparatus for orienting logs having a root end and a crown end and arranged in a row in a heterogeneous orienta-

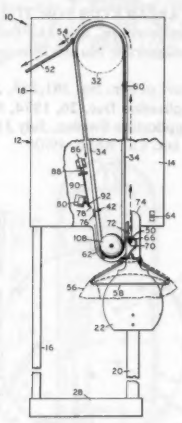
tion so that all the logs have their root ends pointing in the same direction, which comprises, in combination, a conveyor for conveying the logs arranged in a row one log after another log along the conveying path; means for gripping selected logs in sequence at a point intermediate their root and crown ends for removing selected logs from the row at one selected location along the conveying path, turning the selected logs about an axis passing through the gripping point intermediate the ends thereof, as required to orient the turned logs in a homogeneous orientation with the root ends of all the other logs in the row facing in the same direction, and returning the selected turned and homogeneously oriented logs to the row on the conveyor at another selected location along the conveying path, while maintaining continued conveying movement of the logs, and arranged to move along a path approximately parallel to the path of the conveyor and along an endless path, meeting the conveying path at the one and the other locations; and means for rotating the gripping means to turn the gripped logs about said axis.

3,961,699

AUTOMATIC GARMENT HANGER DISPENSER AND HANGERING DEVICE

Gary Marc Hirsch, 1931 NE. 187 Drive, North Miami Beach, Fla. 33179

Filed July 12, 1974, Ser. No. 488,046
Int. Cl.² B65G *47/00*
U.S. Cl. 198—26 **9 Claims**



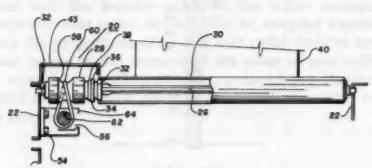
1. A garment (**56**) hanger (**58**) dispensing (**94**) and hangering (**94**) device (**10**) comprising a downward angularly extending hanger hook (**50**) dispenser slope arm (**98**), a hanger hook guide bar (**102**) spaced and supported (**104**) thereabove a distance at least slightly greater than the thickness of a hanger hook (**50**) to be dispensed thereby, a hanger hook stop means (**100**) on said slope arm (**98**) spaced from the downward end of said hanger hook guide bar (**102**) a distance approximately the thickness of a hanger hook (**50**), a J-shaped hook leg (**66**) pivoted (**106**) on said dispenser slope arm (**98**) downwardly of said stop means (**100**), said leg (**66**) having an upper end J-hook point (**110**) pivoting (**106**) to just clear the downward end of said guide bar (**102**) and thus extend up just beyond the downmost hanger hook (**50**) on said slope arm (**98**) to lift such downmost hanger hook (**50**) over said stop means (**100**) to then slide downwardly on said J-hook leg (**66**), means (**70, 72, 74**) limiting the downward pivoting movement of said J-hook leg (**66**) and the downward slide movement of said downmost hanger hook (**50**) thereon and supporting (**70**) said J-hook leg and hanger hook thereon in such downward position while a garment (**54**) may be manually draped on the hanger thereon, an endless belt (**34**), an upper pulley (**32**) and a lower pulley (**36**) on which said endless belt is rotatably mounted, a motor and motor brake (**30**) operatively connected to one of said pulleys, support means (**12**) on which said motor and pulleys are mounted, a hanger hook to long rigid pick-up finger (**42**) fixedly secured on and extending transversely of said endless belt (**34**) and operable by said endless belt in a path intercepting the hanger hook of said garment draped hanger adjacent said lower pulley, the draped garment and hanger abutting the downwardly extending J-hook leg and lifting and holding said J-hook leg (**66**) up until the draped garment and hanger pass up thereby to then release said leg (**66**) to pivot down and cause its J-hook (**68**) end point (**110**) to pick up a further hanger hook from said slope arm, a hanger hook interception drop-off means (**52, 54**) adjacent said upper pulley (**32**) in the path of the garment draped hanger and hanger hook, a manually operable normally open switch (**64**) mounted on said support means (**14**) adjacent the garment draping position (**74**), a motor actuating solenoid (**86**), a slave toggle switch (**80**) connected to said solenoid (**86**) and initiated into action by said manually operable switch (**64**), a toggle switch controlling arm (**78**) of said slave switch extending into the downward path of said hanger hook pick-up means to stop operation of said belt rotating motor at the end of one cycle, and means connecting said solenoid (**86**) to said slave switch arm (**78**) comprising a rod (**90**) pivotally connected to the armature (**88**) of said solenoid and having a closed loop (**92**) extending about said slave switch arm (**78**).

3,961,700

LIMITED TORQUE CONVEYOR CONSTRUCTION

Fred J. Fleischauer, 1345 Meadowlark Drive, Pittsburgh, Pa. 15243

Filed Aug. 9, 1973, Ser. No. 387,152
Int. Cl.² B65G *13/08, 13/073*
U.S. Cl. 198—127 R **2 Claims**



1. A roller conveyor having a plurality of rollers rotatably mounted to define a pass line for articles conveyed by said conveyor, a flexible line drive shaft rotatably mounted adjacent said rollers and extending longitudinally of said pass line, a magnetic coupling and a drive belt for coupling each of said rollers to said drive shaft for limited-torque rotation thereby, said conveyor being a curved section having said conveyor rollers disposed in an arcuate array, means for extending said drive shaft in a generally arcuate configuration along said curved section, said extending means including an arcuate array of bearing members in which said shaft is maintained by means of said drive belts, said bearing members being shaped to receive said flexible shaft.

3,961,701

METHOD OF AND CONVEYOR FOR TRANSPORTING FRAGILE OBJECTS

Paul F. Paddock, Riverside, and Jerry W. Cramer, Upland, both of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed July 10, 1974, Ser. No. 487,242
Int. Cl.² B65G *17/12*
U.S. Cl. 198—131 **12 Claims**

1. A method of transporting objects which are vulnerable to damage by impact, between an object receiving station at

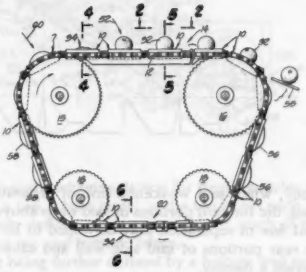
which the objects are successively received along a free-fall path, and an object discharge station,

which comprises the steps of:

providing a continuous row of separate object-carrying cushions, loosely arranging at each of the cushions a displaceable mass of pellets,

maintaining said pellets at said cushions for movement in a path from the receiving station to the discharge station;

directing successive objects along said free-fall path onto successive masses of each cushion, upon its arrival at an object receiving position,



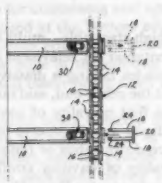
causing said objects to effect the displacement of the pellets of the mass resulting from the impact of the received object to frictionally absorb and dissipate the impact forces, and to form a recess in the pellet mass for stabilizing and holding the object during movement to the discharge station; then

rearranging said pellets to eliminate said recess prior to directing the next object thereto and following discharge of said article from said cushion at said discharge station.

3,961,702
MOUNTING MEANS FOR CONVEYOR FLIGHT

Glen R. Blok, Milwaukee, Wis., assignor to Pratt Manufacturing Corporation, Milwaukee, Wis.

Filed Jan. 20, 1975, Ser. No. 542,146
Int. Cl.² B65G *19/00*; F16G *13/02*
U.S. Cl. 198—175 9 Claims

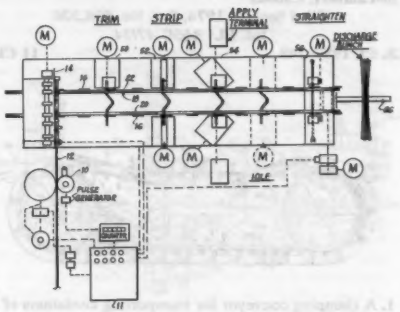


9. In combination with a conveyor including at least one conveyor chain mounted for movement along a conveyor path, and including at least one conveyor flight extending transversely of said chain and connected thereto, the improvement wherein the means for connecting said flight to said chain includes a pin projecting laterally from said chain, a bore in said flight slideably receiving said pin as a result of pushing movement longitudinally only of said flight, and means including cooperating latch means on said flight and pin, one of which is yielding, removably connecting said flight to said pin when the latter has been fully inserted in said bore by said longitudinal pushing movement.

3,961,703
CONVEYOR SYSTEM FOR LENGTHS OF FLEXIBLE MATERIAL

Carl McKeever, Kendallville, Ind., assignor to Lyall Electric, Inc., Albion, Ind.

Filed July 31, 1974, Ser. No. 493,274
Int. Cl.² B21F *23/00*
U.S. Cl. 140—105 13 Claims

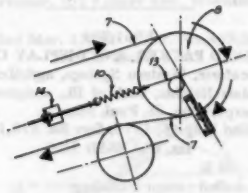


7. Apparatus for discharging lengths of flexible material from a conveyor system in which the lengths of flexible material are gripped by a pair of spaced gripping means comprising an elongate bar extending longitudinally between the pair of gripping means, a pair of elongate spaced parallel folding elements extending substantially parallel but spaced from said bar, means to release the lengths of flexible material from the gripping means as the gripping means advance the lengths of flexible material over the bar whereby the lengths of flexible material are advanced over the bar and are bent under the folding elements as the lengths of flexible material are released from the gripping means, and means to advance the lengths of flexible material along the bar for discharge therefrom.

3,961,704
CONVEYOR BELT WIPER SYSTEM

Beresford Eton Rochester, Jamaica, British W. Indies, assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Nov. 21, 1974, Ser. No. 525,806
Int. Cl.² B65G *15/00*
U.S. Cl. 198—188 4 Claims



1. In combination with an endless conveyor belt a self-tensioning and resiliently mounted belt wiper system for removing particulate material from the working surface of the belt, the system comprising a wiper holder, a sheave means and a pair of individually adjustable spring means mounted adjacent the opposing edges of the belt, the spring means being connected to the wiper holder by connecting means trained about the sheave means, the wiper holder being crosswise disposed across the full width of the belt and a plurality of wipers fixedly attached to the holder in substantially parallel arrange-

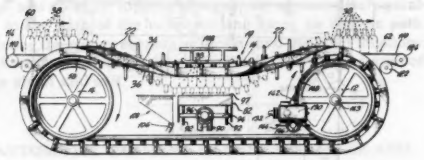
ment to each other, said wipers being in contact with the belt adjacent the normal point of return thereof and at a selected angle relative to the main axis of the belt.

3,961,705

CLAMPING CONVEYOR

George Suciu, Montreal, Canada, assignor to Newmapak Ltd., St-Lambert, Canada

Filed Sept. 9, 1974, Ser. No. 504,320
Int. Cl.² B65G 47/24
U.S. Cl. 198—248 11 Claims



1. A clamping conveyor for transporting containers of various sizes comprising:

a. spaced driven and driving wheels and means rotating said driving wheels;

b. a flexible endless support member mounted to wind over said driving and driven wheels to be brought into endless motion to convey containers placed thereon;

c. a plurality of clamping assemblies mounted on said support member in spaced relationship along the length thereof, each clamping assembly comprising:

— an open ended housing fixed to said support member transversely thereof with respect to the direction of motion applied thereto;

— an L-shaped container gripping member having a base arm slidably extending into said open ended housing to be guided therein and having a clamping arm upstanding from the plane of said support member and on one side thereof, and

— resilient means acting on said L-shaped gripping member to bias the clamping arm thereof toward said support member;

d. wherein successive clamping arms of said L-shaped members are disposed on opposite sides of said support member, and

e. a pair of endless flexible gripping belts each on one side of said support member and means securing said belts to said clamping arms.

3,961,706

COMBINED PACKER AND DISPLAY CARTON

Harry I. Roccaforte, Western Springs, and Herbert L. Lambert, Glendale Heights, both of Ill., assignors to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed May 16, 1975, Ser. No. 578,154
Int. Cl.² B65D 5/50
U.S. Cl. 206—44 R 5 Claims

1. A multi-walled carton including:

a rear wall, side walls, and a front wall connected along generally parallel vertical fold lines to provide a multi-sided body,

a bottom closure for said rectangular body,

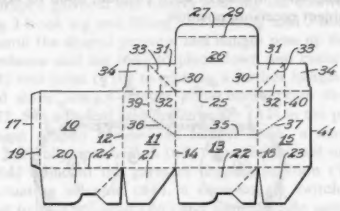
a top closure flap secured to said front wall,

a continuous weakened line of separation extending across the forward halves of said side walls and across said front wall,

fold lines extending upwardly from the rear edges of said weakened line of separation parallel to the vertical edges of said side walls generally midway between the forward and rear edges to the upper edges of said side walls,

side wall closure flaps on the forward portions of said side walls connected to said top closure flaps by gusset flaps,

side wall closure flaps on the rear portions of said side walls connected to said side wall closure flaps on the forward portions of said side walls along fold lines aligned with said fold lines extending upwardly from the rear edges of said weakened line of separation,



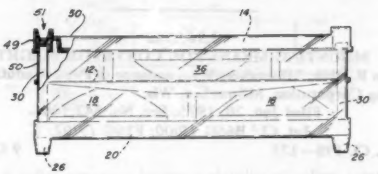
whereby, when said weakened line of separation is separated, the forward portions of said walls above said weakened line of separation may be folded to lie inwardly of the rear portions of said side wall and said rear wall to provide a display.

3,961,707

CATHODE RAY TUBE OR FUNNEL SHIPPING AND/OR STORAGE CONTAINER

David R. Lehr, Hoffman Estates, and James H. Pollard, Westmont, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Oct. 21, 1974, Ser. No. 516,328
Int. Cl.² B65D 19/04, 21/02, 65/02, 85/42
U.S. Cl. 206—419 20 Claims



1. A durable, high-stackable, multi-tiered, hydrophobic shipping/storage container for television cathode ray tubes or funnels or other articles having a massive funnel at one end and a fragile neck at the other end, said container comprising:

a base defining a first plurality of cavities configured and sized to individually snugly receive the faces of a like first plurality of face-down tubes or funnels and also defining a second plurality of cavities configured and sized to individually snugly receive the necks of a second plurality of face-down tubes or funnels, said base having integral hollow legs spaced around the periphery of the container for elevating the container body sufficiently to pass the forks of a fork-lift truck therebeneath such that said container serves as its own skid;

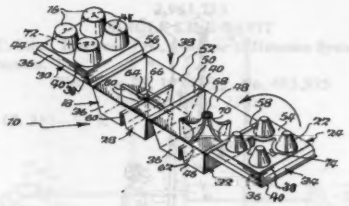
a cap defining cavities configured and sized to individually snugly receive the necks of the face-down tubes or funnels; and

a plurality of posts positioned between said base and cap and in said hollow legs of said base for spacing said base and cap and for giving stacking strength to the container, said container being structured to be stacked post-on-post such that said posts support substantially the entire load of any stacked-on containers.

3,961,708
RETURNABLE BOTTLE PACKING CASE

Henry Claus von Dohlen, Dover, and Wallace Allison Burt, Morristown, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,257
Int. Cl.² B65D 5/48
U.S. Cl. 206—435 5 Claims



1. An integral packaging device for fragile articles comprising a base, a top, a base insert, and a top insert each of which is individually defined by its own sidewalls, each of said sidewalls having top and bottom edges,

said base being further defined by a bottom wall connected to the bottom edges of the sidewalls of the base, and having partitioning means therein,

said top being further defined by a top wall connected to the top edges of the sidewalls of the top, the bottom edge of one of the sidewalls of the top being connected by a hinge to the top edge of one of the sidewalls of the base,

said base insert including a lower wall connected to the sidewalls of the base insert, said lower wall being provided with a plurality of downwardly extending depressions each having an interior which is approximately the size of a lower portion of a fragile article for containing said lower portion, said base insert being hinged at the top edge of one of its sidewalls to the top edge of a sidewall of the base other than the top edge of the sidewall of the base hinged to the top, said base insert being sized to sit tightly into the base with said depressions being separated by said partitioning means of the base,

said top insert including an upper wall connected to the sidewalls of the top insert, said upper wall being provided with a plurality of upwardly extending depressions to match the depressions in the base insert, each depression having the approximately the size of an upper portion of a fragile article for containing said upper portion, said top insert being hinged at the bottom edge of one of its sidewalls to the bottom edge of its sidewall of the top other than the bottom edge of the sidewall of the top hinged to the base, said top insert being sized to fit tightly into the top,

said packaging device being nestable into a similar packaging device when the upper edges of the sidewalls of the base and base insert, and the bottom edges of the top and top insert of the packaging device are in approximately parallel plains, the base insert is not fitted into the base and the top insert is not fitted into the top.

3,961,709
END RESTRAINT FOR SHIPPING BINS

James R. Rowley, Freeport, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

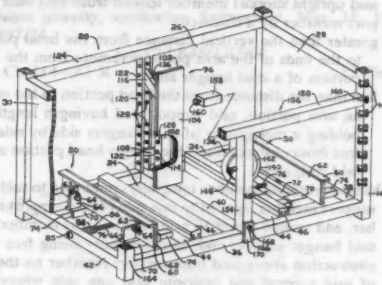
Filed July 15, 1974, Ser. No. 488,346
Int. Cl.² B65D 85/48
U.S. Cl. 206—448 11 Claims

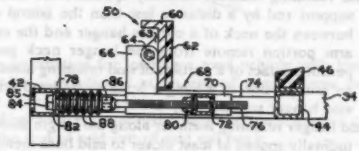
1. An end restraint for an article shipping bin to prevent longitudinal reciprocal movement of the articles, wherein the bin is of the type having a backwall secured to a base, comprising:

at least one guide rail means mounted on the base generally parallel to the backwall;

carriage means slideably mounted on said guide rail means for reciprocal movement in a first direction toward the center of the base and in a second direction opposite to the first direction;

a rigid plate for engaging the articles mounted on said carriage means;





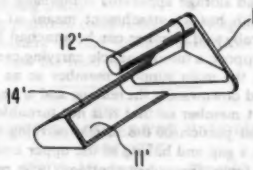
means acting on said carriage means for moving said carriage means in the first direction to a selected one of a plurality of engaging positions and for moving said carriage means in the second direction; and

means for dampening forces acting on said plate as said carriage means moves in the second direction from the selected one of the plurality of positions.

3,961,710
CLOTHES HANGER SUPPORT AND STORAGE APPARATUS

Adelene B. Creamer, 137 Palmer Ave., Mountain View, Calif. 94040

Filed Mar. 13, 1974, Ser. No. 443,269
Int. Cl.² B65B 17/02
U.S. Cl. 211—49 R 1 Claim



1. A complete and independent clothes hanger support and storage assembly for removably supporting a multiplicity of empty conventional clothes hangers having hanger portions including a head and a neck portion and at least first and second arm portions, each arm portion connected at one end to said neck portion, said assembly comprising:

an elongate base support member an upright support member integrally connected to said base support member and projecting upwardly therefrom,

an elongate hanger support rod cantilevered and integrally connected from one end to said upright support member and sloping upwardly away from said base support member in the direction along said rod away from said upright support member,

said hanger support rod at the end thereof connected to the said upright support member spaced from said base support member by a distance

greater than the vertical distance from the head portion to the ends of the arm portions remote from the neck portion of a coat hanger and

less than the distance from the head portion to the end of an arm portion, said support rod having a length for holding a multiplicity of coat hangers side by side and free from obstruction of the hanger head portion above said rod, and

a hanger retaining member integrally connected to said base support member, spaced to one side of said support member, and spaced closer to said base support member than said hanger support rod, said assembly being free from obstruction above said base support member on the side of said support rod opposite said one side where said hanger retaining member is located,

said retaining member laterally spaced from said hanger support rod by a distance less than the lateral distance between the neck of a clothes hanger and the end of an arm portion remote from the hanger neck portion to permit contact of a portion of said retaining member with an arm portion of a hanger hung by its head portion on said hanger support rod,

said hanger retaining member along the length therof longitudinally spaced at least closer to said base member than said hanger support rod by a distance equal to or greater than the vertical distance from the top of the hanger head portion to a point on the hanger arm portion spaced laterally from the top of the head by a distance equal to the lateral spacing at said upright support member between the hanger support rod and said contacting portion of said hanger retaining member whereby an arm of an empty clothes hanger with the head portion thereof hooked over said support rod contacts said hanger retaining member when said base support member is supported on a horizontal surface.

3,961,711

OVERHEAD STORAGE APPARATUS

Arthur Thomas Perks, 37, The Green, Castle Bromwich, Birmingham B36 9AL, England

Continuation of Ser. No. 331,444, Feb. 12, 1973, abandoned. This application Dec. 26, 1974, Ser. No. 536,696

Int. Cl.[2] A47F 5/08

U.S. Cl. 211—117 **5 Claims**

1. Overhead storage apparatus comprising a main support member which has an attachment means at an upper end thereof whereby said member can be attached to an overhead stationary support; a tubular article carrying member which is mounted on the main support member so as to be slidable upwardly and downwardly therealong and is engaged with the main support member so that it is not turnable therearound, the lower end portion of the article carrying member being formed with a gap and having at the upper end of said gap a downwardly facing transverse abutment face; releasable catch means comprising an upwardly facing transverse abutment face which is provided on an upwardly bent lower end portion of the main support member and is resiliently biased to an operative position in which it is positively engaged beneath said abutment face of the article carrying member when the article carrying member is lifted into a raised position relative to the main support member to retain the article carrying member in said raised position, the main support member being resiliently flexible and bowed so that it bears against the internal surface of the article carrying member at the side of the latter opposite that side at which the abutment faces are disposed and said faces are thereby biased into mutual engagement by the inherent resilience of the main support member, the upwardly bent lower end portion of the main support member being disposed in said gap in the lower end of the article carrying member when the catch means is engaged and said abutment faces being manually transversely relatively

movable out of mutual engagement against said resilient bias to release the catch means and allow the article carrying member to move downwardly relative to the main support member into a lowered position; and a stop arranged inside the tubular article carrying member so as to be engaged by said abutment face of the main support member when the article carrying member is moved to its lowered position thereby to retain the article carrying member in said lowered position.

3,961,712

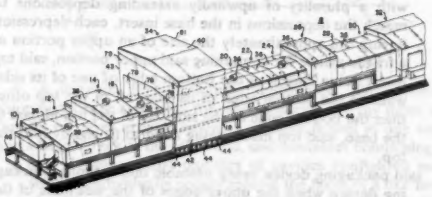
INDUSTRIAL BUILDING STRUCTURE SYSTEM

Thomas S. Bartley, Mobile, Ala., assignor to International Paper Company, New York, N.Y.

Filed Oct. 31, 1974, Ser. No. 519,647

Int. Cl.[2] B66C 17/06

U.S. Cl. 212—5 **10 Claims**



1. A crane housing system movable on track means positioned on each side of a building having individually removable roof structures, comprising:

a. a top structure laterally spanning the roof of the widest part of said building;

b. side wall members positioned exterior to said building and supporting said top structure for clearing the highest structural portion of said building;

c. transit means attached to said side wall members for moving said crane housing on said track means in a longitudinal direction relative to said building;

d. end wall sections vertically movable and cooperating with said top structure and said side walls members for substantially enclosing longitudinal sections of said building, said end wall sections conforming to the contour of the roof of said building, and

e. crane means attached to said crane housing for removing a roof structure and suspending within said crane housing the removed roof structure during subsequent crane operations, said crane means including:

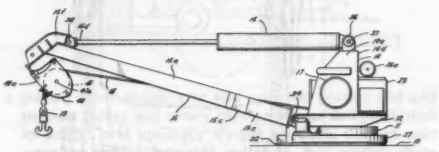
1. a first overhead crane adapted to raise or lower a roof section of said building, and

2. a plurality of second overhead cranes movable laterally of said crane housing.

3,961,713
SINGLE LINE DAVIT

Joe C. Stine, Houston, Tex., assignor to Houston Systems, Inc., Houston, Tex.

Filed June 28, 1974, Ser. No. 483,925
Int. Cl.² B66C 23/06
U.S. Cl. 212—58 R **5 Claims**



1. A new and improved single line davit for raising and lowering extremely heavy pipe lengths or the like, comprising:

a rotatable base adapted for mounting onto the deck of a floating vessel or the like, said base being mounted for rotation with respect to said deck;

a pedestal mounted onto said rotatable base for rotation therewith;

a davit-supporting frame mounted onto said pedestal for rotation therewith, said davit supporting frame including opposing, spaced frame members extending upwardly at approximately the center of said pedestal;

a boom assembly pivotally mounted at said opposing frame members and a hydraulic ram assembly pivotally connected between said davit-supporting frame and said boom assembly for moving said boom assembly;

a winch assembly mounted internally of said opposing frame members, said winch assembly including a rotating drum located at substantially the center of said rotatable base and having mounted thereon a single line which extends outwardly through said boom assembly, for raising, lowering or otherwise supporting pipe lengths or the like and a winch drive;

said winch drive including:

drum mounting means mounting said drum for rotation at substantially the center of said rotatable base;

said drum having a drum shaft extending through said drum and through said opposing frame members;

a first planetary gear drive mounted on one of said opposing frame members in operative engagement with said drum shaft, said first gear drive being driven by a motor means mounted on said one opposing frame members; and

a second planetary gear drive being mounted with said other opposing frame member in operative engagement with said drum shaft and said drum for rotating said drum in response to rotation of said shaft;

a substantially circular rack adapted for mounting in a stationary position onto the deck, said circular rack being positioned circumferentially around said rotatable base in a horizontal plane adjacent the horizontal plane of said rotatable base;

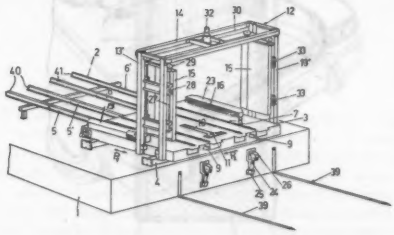
rotation means mounted with said rotatable base for engaging said circular rack for rotating said circular base; and

said rotatable base and said stationary rack being mounted for rotation with respect to each other by a bearing assembly mounted therebetween, said bearing assembly including an inner and outer race with ball bearings therebetween, said circular rack operating as said outer race and said inner race being affixed to said rotatable base.

3,961,714
INSTALLATION FOR LOADING A ROAD VEHICLE WITH LOADING UNITS

Max Buehler, Thalwil, Switzerland, assignor to Weelpal AG, Zug, Switzerland

Filed Mar. 13, 1975, Ser. No. 557,968
Claims priority, application Switzerland, Mar. 15, 1974, 003807/74
Int. Cl.² B65G 67/08
U.S. Cl. 214—41 R **13 Claims**



1. An installation for loading a road vehicle with loading units which is positioned at an exit of a warehouse on an inclined rail track, comprising:

a loading platform supported on a rail track loading ramp at the end of said exit of said rail track;

said loading platform being displaceably supported on lifting means to lift said platform relative to said loading ramp and also relative to said exit end of said rail track;

a first conveying mechanism countersunk in the floor of said loading platform comprising conveying means provided with catches extending above the floor surface of said loading platform and adapted to catch the loading units standing on the loading platform;

a second conveying mechanism submersibly attached to the floor of said loading platform comprising a ram liftable out of the floor of said loading platform into a working position and adapted to rest against the back sides of the loading units to push them into the road vehicle;

a number of rail members connecting said end of said rail track to said loading platform;

each of said rail members being movably connected to the end of said rail track with their one end in alignment while their other end is adapted to rest on the surface of said loading platform;

said rail members being arranged so as to converge from a distance between each other given by the arrangement in the warehouse to a minimal distance given by the width of the loading units;

said loading platform comprising conveying means for conveying clusters of said loading units from said loading platform into the road vehicle.

3,961,715
TRUNK MOUNTED ROLLER FOR HANDLING HEAVY OBJECTS

Harry J. Ellen, 499 W. Missouri Ave., Phoenix, Ariz. 85013

Filed Apr. 2, 1973, Ser. No. 346,718
Int. Cl.² B60P 1/00
U.S. Cl. 214—84 **1 Claim**

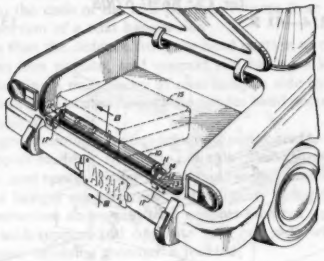
1. A device for mounting in the trunk of an automobile for aiding in loading and unloading luggage therefrom comprising:

a pair of brackets for spacedly mounting within the opening of the trunk for supporting a roller substantially perpen-

dicular to the longitudinal axis of the automobile, juxtapositioned to its rear bumper and with its bearing ends extending slightly above the periphery of the opening of the trunk, the periphery of which opening along the floor of the trunk extends above the floor of the trunk, and

a roller mounted on said ends of said brackets to extend therebetween above the floor of the trunk and the periphery of the opening of the trunk adjacent the floor of the trunk for rotation thereon, and

said roller being positioned so that a part of its outer surface extends above the edge of the periphery of the juxtapositioned opening of the trunk so that luggage can be moved over said roller without engaging the periphery of said edge of said opening.

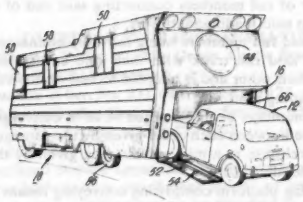


3,961,716

MOBILE HOUSING UNIT

Michel G. Renaud, 71 Youville, Varennes, Quebec, Canada

Filed May 6, 1974, Ser. No. 467,598
Int. Cl.² B65G 67/02
U.S. Cl. 214—85 5 Claims



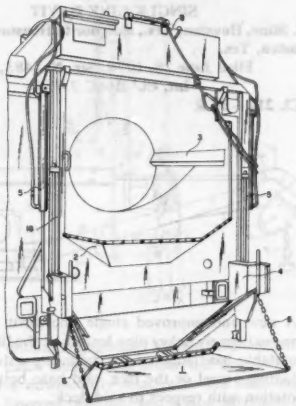
1. A self-powered vehicle having a chassis and at least first rear wheels on the chassis, a secondary loadbearing wheel structure including at least a pair of wheels being suspended on springs from the chassis, the secondary structure being provided with means for receiving at least a portion of a vehicle ro be carried whereby said vehicle to be carried is at least partially supported independently of said chassis, and connecting means provided to allow the load-bearing wheel structure limited flexible movement relative to the chassis, said connecting means including a universal joint adapted for axial sliding movement to allow the load-bearing wheel struture to have relative flexible and independent movement from the truck chassis.

3,961,717

COMBINATION SPILL PLATE AND STEP FOR WASTE DISPOSAL VEHICLES

George L. Sabine, 524 Cleveland Town Road, Boonesboro, Md. 21713

Filed Apr. 2, 1975, Ser. No. 564,384
Int. Cl.² B60P 1/44
U.S. Cl. 214—302 9 Claims



1. A combination lift and spill plate for use in combination with a container vehicle further including a hatch within a wall of said container vehicle, said hatch further having a lip permanently attached to its lower most edge, comprising:

A. vertical transport means attached to the body of said container vehicle on either side of said hatch;

B. a stabilizing member means operably engaged to be vertically moved by said vehicle transport means, said stabilizing member means further including substantially vertical outrigger members extending rearwardly and proximate said vertical transports;

C. a substantially rectangular spill plate having an innermost edge substantially parallel to said container vehicle wall and further being hingedly attached proximate said innermost edge to said stabilizing member,

D. restraining means operable to selectively restrain said spill plate in a substantially horizontal position and securing means for selectively securing said spill plate in contact with said outriggers when said spill plate is pivoted upwardly,

E. wherein said spill plate is configured for a first sealing engagement with said stabilizing member means when pivoted into said contact therewith, and said innermost spill plate edge is further configured for a second sealing engagement with said hatch lip when said stabilizing member means is vertically raised proximate said hatch.

3,961,718

SELF-LOADING AND SELF-UNLOADING TRAILER

Gustave Lucas, Route de Saint-Aubin, La Verrie (85), France

Continuation-in-part of Ser. No. 245,368, April 19, 1972, abandoned. This application Jan. 2, 1974, Ser. No. 429,944
Claims priority, application France, Apr. 20, 1971, 71.14872; Nov. 10, 1971, 71.41931
Int. Cl.² B60P 1/00
U.S. Cl. 214—520 5 Claims

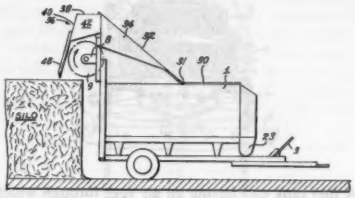
1. In self-loading and self-unloading apparatus comprising a vehicle having a bottom and enclosure-forming side walls, an open top portion at one end of said vehicle and a horizontal endless conveyor extending along said bottom wall, the improvement comprising:

an upright frame mounted on said vehicle at said one end thereof;

support means mounted on said frame for vertical displacement therealong;

rotary pick-up means mounted on said support means and arranged to pick up products and throw the same upwardly;

a fixed cover over the top portion at the other end of said vehicle; and



a guiding chute means over said open top portion and said support means and rotary pick-up means and positioned to deflect said upwardly thrown products through said open top portion into said enclosure, said guiding chute means comprising a hood and a cover plate;

said hood fixed to said support means and movable vertically with said support means and said rotary pick-up means;

said cover plate hinged to said fixed cover and extending over said open top portion so as to be slidably supported on said hood.

3,961,719

CAP WHICH CAN BE PACKAGED WITHOUT DANGER OF WEDGING

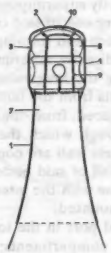
Bernard Pierlot, and Georges Potaufeu, both of Clisalu, France, assignors to Clisalu, Mareul, France

Filed Feb. 24, 1975, Ser. No. 552,431

Claims priority, application Luxemburg, Feb. 28, 1974, 69513

Int. Cl.² B65D *41/62*

U.S. Cl. 215—277 **4 Claims**



1. In a cap adapted to be applied to enclose a previously sealed open end of a bottle, in which the cap is formed of foil, a bottom wall and a long skirt of frustoconical shape extending from the bottom wall dimensioned to have a length greater than the diameter of the cap, and a notch in the skirt portion closely spaced from the bottom wall, a means for protecting the cap and for maintaining the cap in an easily separable relation when a plurality of such caps are telescoped one within another in a stack comprising a cushion of foam material in the interior of the cap adjacent the bottom wall and extending from the bottom wall to the said notch.

3,961,720

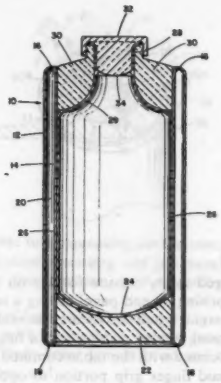
VACUUM INSULATED CONTAINER

Gordon W. Potter, Jr., Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.

Filed Oct. 7, 1974, Ser. No. 512,411

Int. Cl.² A47J *41/02*

U.S. Cl. 215—13 R **16 Claims**



1. A thermally insulated container comprising:

a. a hollow double walled sleeve formed by a pair of concentric tubular members sealed together at their ends to form an airtight chamber therebetween and from which air is substantially evacuated;

b. a base of thermal insulating material sealingly engaging one end of said sleeve;

c. a liner secured in the hollow central portion of said sleeve and having an opening at the other end of said sleeve for receiving material to be thermally insulated; and

d. means for sealing and thermally insulating said opening and the immediately adjacent portions of said liner.

3,961,721

MAGNETIC CONTAINER COVER

Edwin J. Gordon, and Adam I. Gordon, both of 1208 Brooklands Road, Kettering, Ohio 45409

Filed Nov. 28, 1975, Ser. No. 636,247

Int. Cl.³ B65D *55/00*

U.S. Cl. 220—230 **10 Claims**

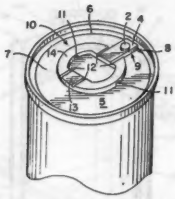
1. In combination with a metal container comprising a cylindrical wall and having an open top and a closed bottom; a removable flexible cover comprising a flat circular body having a downturned flange; the inner surface of said flange frictionally engaging the outer surface of said wall; said flange having at least one integral downwardly extending magnetic member contacting said wall to secure said cover thereon.

3,961,722

CHILD RESISTANT EASY OPENING CLOSURE

John S. Bozek, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Jan. 27, 1975, Ser. No. 544,151
Int. Cl.² B65D 41/32
U.S. Cl. 220—270 29 Claims



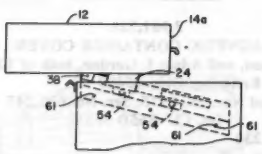
1. An improved safety closure for use on a can or similar container comprising an end panel having a score defining an opening flap therein, a pull tab secured to said end panel, said pull tab comprising a nose portion and a finger grip portion, first means associated with the tab accommodating ineffective movement of said finger grip portion to open said flap, and second means selectively operable to render said first means ineffective and interrelating said portions of said tab to form a lever effective to open said flap, said second means being operable prior to movement of said finger grip portion.

3,961,723

RECEPTACLE WITH SLIDING COVER

Alan Eckel, Westford, Mass., assignor to Eckel Industries, Inc., Cambridge, Mass.

Filed July 12, 1974, Ser. No. 487,878
Int. Cl.² B65D 43/14
U.S. Cl. 220—331 10 Claims



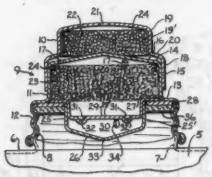
1. A receptacle, a cover for said receptacle, and means connecting said cover to said receptacle for facilitating moving of said cover between open and closed positions relative to said receptacle, said connecting means comprising (a) first and second inclined slideway guides attached to first and second opposite sides respectively of said receptacle, (b) first and second rails pivotally attached to said first and second guides respectively, (c) first and second slide members slidably mounted on said first and second rails respectively, and (d) first and second connector members attached respectively to first and second opposite sides of said cover and also to said first and second slide members, said connecting means being arranged so that (1) said slide members extend along said guides when said cover is in closed position and (2) pushing said cover from its closed position so as to force said slide members to slide along said guides on said rails toward the pivot points of said rails will cause the weight of said cover to pivot said rails in a direction whereby said weight will assist said cover to reach open position.

3,961,724

FUEL TANK FILLER CAP WITH IMPROVED VENT

Robert J. Kapsy, Hartland, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Mar. 13, 1975, Ser. No. 557,982
Int. Cl.² B65D 51/16
U.S. Cl. 220—371 5 Claims



1. A fuel tank cap having an air vent through which vapor can leave and air can enter the tank and means to prevent liquid fuel in the tank from being expelled through the air vent, comprising:

A. an inverted cup-shaped portion adapted for detachable connection to the neck of a fuel tank inlet;

B. walls fixed with respect to said inverted cup-shaped portion defining at least two superimposed coaxial substantially cylindrical compartments above the top of said inverted cup-shaped portion, and a bottom compartment beneath said superimposed compartments,

each of said compartments having a side wall and said bottom compartment also having a bottom wall which together with its side wall separates the bottom compartment from the interior of the inverted cup-shaped portion;

C. the upper one of two of said directly superimposed compartments being smaller in diameter than the lower one and its side wall having a flange projecting laterally outward from its lower marginal edge;

D. the wall that separates said directly superimposed compartments having its peripheral portion underlying said laterally projecting flange and being spaced therefrom a short distance to form a shallow annular space which communicates with the upper one of said directly superimposed compartments;

E. port means in said peripheral portion of the wall that separates said directly superimposed compartments communicating the lower one of said compartments with said shallow annular space and forming the only communication between said directly superimposed compartments;

F. the wall separating the lowermost one of said superimposed compartments from the bottom compartment having port means spaced from the common axis of said compartments through which the compartments at the opposite sides of said wall are communicated;

G. port means in a wall of said bottom compartment communicating the same with the interior of the fuel tank on which the cap is mounted;

H. a centrally located port in the top of the uppermost of said superimposed compartments; and

I. fibrous material filling said superimposed compartments.

3,961,725

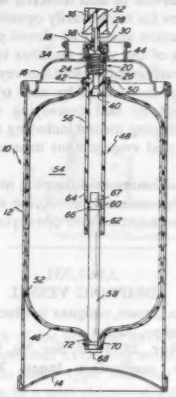
METHOD AND APPARATUS FOR DISPENSING FLUIDS UNDER PRESSURE

Richard A. Clark, 12 Kirkwood Drive, Glen Cove, N.Y. 11542

Filed Apr. 9, 1974, Ser. No. 459,440
Int. Cl.² B65D 37/00
U.S. Cl. 222—1 15 Claims

1. A method for dispensing a fluid under pressure from a container for the fluid by means of an expanded resilient bladder which contains the fluid, and wherein the resilient character of said expanded bladder provides the pressure for

expelling the fluid from said bladder, the improvement comprising tensioning said bladder by the introduction of fluid into the bladder, mechanically tensioning said bladder, said mechanical tensioning being applied internally of said bladder, said mechanical tensioning being substantially fully applied by



fluid entering said container but prior to fluid entering said bladder, and dispensing the fluid while releasing the fluid tensioning of said bladder, but while maintaining said mechanical tensioning of said bladder at least until substantially all of the fluid is expelled therefrom.

3,961,726

PRESSURIZATION AND DISPENSING DEVICE FOR A LIQUID MONOPROPELLANT IN A CONTAINER

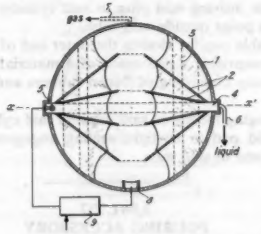
Maurice Pierre Joseph Fournet, Meudon, France, assignor to Centre National d'Etudes Spatiales, Paris, France

Filed Aug. 22, 1975, Ser. No. 607,053

Claims priority, application France, Aug. 26, 1974, 74.29141

Int. Cl.² B67B 7/24

U.S. Cl. 222—3 **11 Claims**



1. A reservoir for a liquid monopropellent such as hydrazine, which reservoir is intended to be full of liquid monopropellent at the beginning of its period of operation, said reservoir being provided with means controlling the thermal transformation of the liquid monopropellent into a gaseous phase, a plurality of partitions within the reservoir which are arranged to confine the liquid monopropellent in a preselected zone of the reservoir by capillary or surface tension effects and to define a complementary zone of the reservoir where the gaseous phase is formed under pressure as a result of thermal treatment of the liquid monopropellent, and means for discharging the liquid monopropellent or the gaseous phase or both from the reservoir.

3,961,727

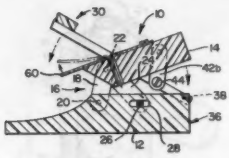
COLLAPSIBLE TUBE SQUEEZING DEVICE

Cecil Julius Spears, 112 McFarland Road, Enfield, N.C. 27823

Filed Nov. 4, 1975, Ser. No. 628,781

Int. Cl.² B65D 35/28

U.S. Cl. 222—103 **6 Claims**



1. A collapsible tube squeezing device comprising a pair of jaw members, means mounting said jaw member to receive a collapsible tube therebetween, said mounting means including:

a. a first pair of links pivotally connecting opposite sides of one end of each jaw member with the longitudinal axes of the pair of links being generally normal to planes of the jaw members, and

b. a second pair of links pivotally connected at one end to the pivotal connection between the first pair of links and one of the jaw members and connected at the other end to the other jaw member for limited sliding motion relative to said other jaw member in a plane parallel to the plane of the said other jaw member.

3,961,728

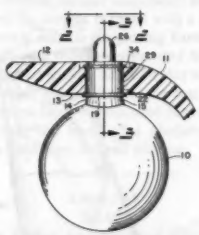
FLUID CONTAINER MOUNTING METHOD AND APPARATUS

James T. Harris, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 31, 1975, Ser. No. 563,601

Int. Cl.³ B67D 5/06

U.S. Cl. 222—180 **18 Claims**



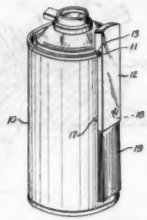
1. A fluid container for locking engagement in an opening of a supporting member comprising a tubular member projecting outwardly from said container for insertion in said opening, a collar member fastened around said tubular member and having a size generally the same as the size of said opening for a generally close fit of said collar in said opening, separate locking means mounted on said collar member for movement outwardly of said collar member into locking engagement with said supporting member after movement of said collar member with said tubular member into said opening.

3,961,729

SHAVING CREAM CAN HAVING BRUSH ATTACHMENT

William C. Grimm, 250 Woodlawn Ave., Jersey City, N.J. 07305

Filed Oct. 17, 1974, Ser. No. 515,554
Int. Cl.[2] A46B *11/02, 15/00*
U.S. Cl. 222—192 1 Claim



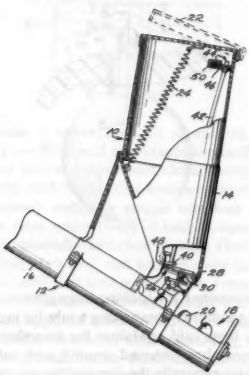
1. In combination with a can for shaving cream, said can having an upper round rim, a shaving bush attachment adapted to be carried by said can and comprising an elongated plate with upper and lower edges and inner and outer surfaces, said plate having a slot extending across the inner surface of the plate adjacent the upper edge thereof and having upper and lower surfaces, the upper surface of the slot extending to the inner surface of the plate by a greater length than that of the lower surface, the lower surface of the slot being curved, the upper and lower surfaces of the slot being spaced to fit over the rim of said can, a plurality of projections carried by said plate and extending from the inner surface of the plate to engage a surface of the can, and a brush carried by the lower edge of the plate and consisting of parallel bristles extending below the plate.

3,961,730

LIQUID DISPENSING APPARATUS

Robert W. Haynes, c/o Haynes Chemical Co., East Grand Forks, Minn. 56721

Filed Sept. 25, 1974, Ser. No. 509,344
Int. Cl.[2] G01F *13/00*
U.S. Cl. 222—231 7 Claims



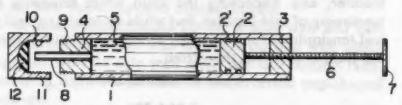
1. Liquid-dispensing apparatus comprising
a. conveying means for conveying material to be treated, said conveying means including engagement means,
b. a liquid reservoir adapted to hold material-treating liquid,
c. valve means biased to a closed position for preventing delivery of liquid from said reservoir to material being conveyed by said conveying means when closed, and alternatively for allowing delivery of an amount of liquid from said reservoir to said material when opened,
d. tripping means for temporarily opening said valve means with a snap-action against its closed-position bias so that no movement of the valve member takes place in direct response to movement of said conveying means but only in response to movement by said tripping means after release thereof by said conveying means engagement means, said tripping means including a member for cooperation with said engagement means of said conveying means, and
e. means for positioning said tripping means to temporarily open said valve means once during each predetermined degree of movement of said conveying means.

3,961,731

DRIPPING VESSEL

Ei Mochida, Tokyo, Japan, assignor to Mochida Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1975, Ser. No. 572,507
Claims priority, application Japan, May 2, 1974, 49-050358[U]
Int. Cl.[2] B67D *5/42;* B65D *47/04*
U.S. Cl. 222—390 5 Claims



1. A vessel for holding and dispensing a liquid alkyl boron compound, said vessel comprising:
a cylinder made of a material selected from the group consisting of metal and glass, said cylinder having a first end pierced by a fine tube,
a movable plug within said cylinder, said plug being made of a material selected from the group consisting of fluoro rubbers and fluoro resins,
means for moving said plug in said cylinder and operable from a point outside said tube,
a removable cap for closing the outer end of said tube, said cap comprising a pad made of a material selected from the group consisting of fluoro rubbers and fluoro resins, and
interengaging means on said cap and said cylinder for holding said pad in air-tight sealing engagement with said outer end of said tube.

3,961,732

POURING ACCESSORY

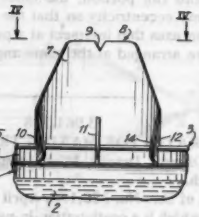
Marshall E. Roberts, 610 East Ave., Opelika, Ala. 36801

Filed May 12, 1975, Ser. No. 576,463
Int. Cl.[2] B65D *5/74*
U.S. Cl. 272—570 4 Claims

1. A pouring accessory for a container storing liquid in a substantially airtight manner and having an upper rim and a pair of concentric spaced lips formed in the upper rim to form a trough therebetween, the lips constituting an inner lip having a predetermined diameter and an outer lip having a diameter greater than the predetermined diameter, said pouring accessory comprising
a substantially flexible sheet-type member removably accommodated in the trough of the upper rim of a container for guiding liquid poured from the container out of the container bypassing said trough and thereby preventing

the liquid from entering said trough and from spilling on the outside of the container; and

securing means on the sheet-type member comprising a plurality of spaced securing devices for releasably securing said member to the inner lip of the upper rim of the



container, each of the securing devices having a substantially rib-like member extending substantially perpendicularly from the sheet-type member and having a slot formed therein in a part thereof abutting said sheet-type member for accommodating the inner lip of the upper rim of the container.

3,961,733

DEVICE FOR PRESSING ARTICLES OF CLOTHING

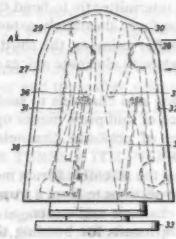
Martin Kannegiesser, Bad Salzuflen, and Richard Juraschek, Vlotho, Weser, both of Germany, assignors to Herbert Kannegiesser Kommanditgesellschaft, Volthо, Weser, Germany

Filed Mar. 26, 1975, Ser. No. 562,275

Claims priority, application Germany, Mar. 27, 1974, 2414702

Int. Cl.² D06C *15/00*

U.S. Cl. 223—57 **9 Claims**



1. A device for pressing articles of clothing, more particularly, for pressing the body parts of shirts and work uniforms having at least two heated pressing plates comprising: a) a support; b) a molded body mounted on the support and consisting of an inflatable buck or the like made of a pressure medium-resistant material; c) means to advance and retract the inflatable buck between the heated pressing plates; and d) controllably movable supporting and spreading elements (13, 14 or 29–32) attached to said support and located inside the inflatable buck, said elements movable to fully support the contours of the shoulders and/or side parts of the inflatable buck (11 or 27) against the contours of the article to be pressed.

3,961,734

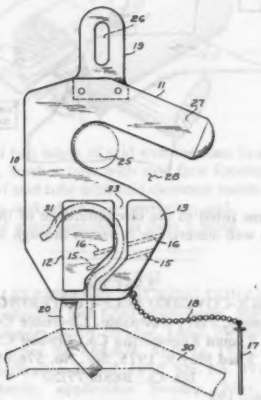
SUIT CARRIER HANDLE

Clay L. Threeton, Sr., Atlanta, Ga., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Aug. 13, 1974, Ser. No. 496,982

Int. Cl.² A45C *71/00*

U.S. Cl. 224—45 T **4 Claims**



1. A device for use in manual carrying, or alternately, storing in suspension, one or more clothes hangers on which garments may be hung, said device fitted with a carrying handle, a first end of which is fastened to a projection extending from the body of the device, said projection of a length to space the handle member from the body of the device by a distance of the diameter of a conventional horizontal closet pole to permit slipping the handle over a conventional horizontal closet pole said handle member extending downwards at an acute angle to the horizontal plane from the said first end, when the device hangs freely from the handle member on a horizontal closet pole so that the second and free end of the handle extends below the top of the closet pole supporting the handle member, said angular orientation of the handle member also enabling a person to comfortably grip the handle member when carrying the device with lengthy items of clothing hung from a clothes hanger suspended from the device, in which the body of the device is fitted with a first and a second shaped section, each section projecting from the same side of the said body, with said sections separated from each other by a substantially hooked shaped slot of a size to loosely fit about the neck of a clothes hanger hook, the top of which hook is hanging over the first said section, said first said section being shaped to fit within the hook of a clothes hanger which is supported by the said first shaped section.

3,961,735

SEAL

Alexander James Finlay, and Geoffrey Taylor, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sept. 9, 1974, Ser. No. 504,264

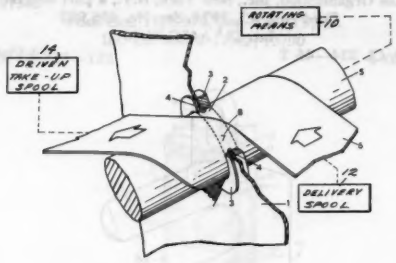
Claims priority, application United Kingdom, Oct. 4, 1973, 46377/73

Int. Cl.² B65H *17/24*

U.S. Cl. 226—168 **4 Claims**

1. A sealing means for permitting continuous passage of a web material through a gap in a wall separating two zones at different pressures while minimising the flow of air from one zone to the other, comprising a cylindrical rod passing through the gap, means for feeding the web material on to the rod in helical disposition on one side of the wall, means for removing

the web material from the rod after the web material has passed through the gap to the other side of the wall, and



sealing means fitted to the circumference of the gap so as to contact the web material as it passes through the gap.

3,961,736

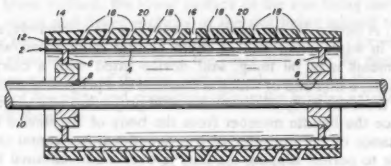
RUBBER-COVERED SELF-CENTERING ROLLS

James J. Fatula, Perry Township, Lawrence County, Pa., assignor to Ryman Engineering Co., Elwood City, Pa.

Filed May 9, 1975, Ser. No. 576,091

Int. Cl.² B65H *17/20*

U.S. Cl. 226—192 **8 Claims**



1. In a self-centering roll having a body and flexible projections on each side of the transverse center of the roll extending outwardly from the body toward said transverse center; the improvement comprising a first layer of rubber surrounding said body, and a second layer of rubber surrounding said first layer, the rubber in said first layer being softer and of lower density than the rubber in said second layer, said flexible projections being formed in said second layer.

3,961,737

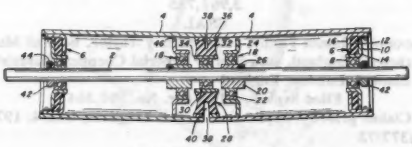
SELF-CENTERING ROLLS

James J. Fatula, Perry Township, Lawrence County, Pa., assignor to Ryman Engineering Co., Ellwood City, Pa.

Filed May 9, 1975, Ser. No. 576,090

Int. Cl.² B65H *17/20*

U.S. Cl. 226—192 **16 Claims**



1. A self-centering roll comprising a straight shaft; two tubular end rim portions surrounding said shaft; a pair of deflectible end webs mounted on said shaft, each of said webs including a bearing surrounding said shaft with its outer periphery spaced from the inner wall of its associated rim portion, and an outer member extending between and fastened to said bearing and said associated rim portion; and a pair of inner webs mounted on said shaft one adjacent the inner end of each tubular end rim portions, each of said inner webs including an eccentric hub attached to said shaft, a bearing surrounding said eccentric hub, and a radial member eccentric with respect to said shaft surrounding said bearing concentric therewith, the outside diameter of said eccentric radial member being only slightly less than the inside diameter of the associated end rim portion, the inner webs being arranged with the same eccentricity so that the two end rim portions will rotate on axes that intersect at a point between the inner webs and are arranged at the same angle with respect to the shaft axis.

3,961,738

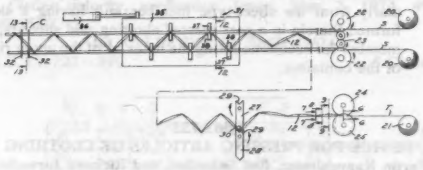
APPARATUS FOR MAKING TRUSS MEMBERS

Melvin L. Ollman, Detroit, Mich., assignor to C-O, Inc., Detroit, Mich.

Division of Ser. No. 350,158, April 11, 1973, Pat. No. 3,827,117, which is a continuation-in-part of Ser. No. 129,040, March 14, 1971, abandoned. This application July 1, 1974, Ser. No. 484,703

Int. Cl.² B23K *31/00*

U.S. Cl. 228—5.1 **16 Claims**



1. An apparatus for making truss members comprising

means for intermittently feeding three endless strips to a pressing station,

press means at said pressing station operable intermittently to form a pair of said endless strips into parallel channels, said channels having a base and flanges and to form said third strip into a plurality of interconnected struts,

each strut comprising a non-flat portion and being connected to adjacent struts by flat end portions,

means operable intermittently to bend the third strip at said flat portions to form alternately extending apices,

means for thereafter bringing the third strip between said pair of channels with alternate apices contacting opposite channels,

means for welding said channels to said apices,

means in advance of said press means operable periodically to cut flanges of opposite channels at predetermined points,

means for cutting the assembled truss members at certain of said cut flange portions to form a truss section having free ends on said channels and struts,

and end bending means for bending the free ends of the channels and struts inwardly toward one another at other of said cut portions.

3,961,739

METHOD OF WELDING METALS USING STRESS WAVES

Basil P. Leftheris, East Northport, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Division of Ser. No. 244,402, April 17, 1972, Pat. No. 3,824,824, which is a continuation-in-part of Ser. No. 863,045, Oct. 2, 1969, abandoned. This application May 7, 1974, Ser. No. 467,723

Int. Cl.² B23K *21/02*; B23P *11/00*

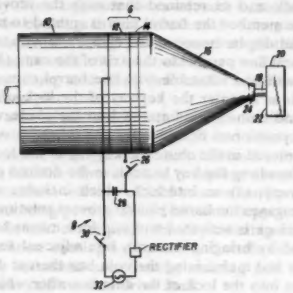
U.S. Cl. 228—110 **3 Claims**

1. A method of spot welding two metallic workpieces of similar materials which are in contact with one another, comprising the steps of:

electromagnetically generating a stress wave having a high particle velocity;

conditioning the high velocity stress wave to increase its intensity and duration;

applying the conditioned stress wave as a single pulse to one of the metallic workpieces; and



providing sufficient energy density at the interface of the workpieces from the conditioned stress wave pulse to generate enough heat to weld the two metallic workpieces together.

3,961,740

PROCESS FOR FORMING A COMPOSITE OF A METALLIC MATERIAL AND VULCANIZED RUBBER

Yuzuru Nakamoto, Kodaira; Eishi Kubota, Kokubunji, and Fukushi Suzuki, Kodaira, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Mar. 4, 1974, Ser. No. 447,631

Claims priority, application Japan, Mar. 12, 1973, 48-27925

Int. Cl.² B05D *1/36, 7/14*

U.S. Cl. 427—405 **4 Claims**

1. A process for producing a composite product which is a metallic base and a vulcanized rubber with an intermediate adhesive layer which is a ternary alloy composed of 59 to 73% by weight copper, 23 to 34% by weight zinc and 2 to 13% by weight tin, said process comprising coating a metallic substrate with said ternary alloy, coating resulting product with an unvulcanized rubber and thereafter vulcanizing said rubber.

3,961,741

HEAT TRANSFER TUBES WITH INTERNAL EXTENDED SURFACE

Eric Klein, Verona, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Continuation of Ser. No. 288,606, Sept. 13, 1972, abandoned. This application Mar. 15, 1974, Ser. No. 451,721

Int. Cl.² B23K *31/02*

U.S. Cl. 228—144 **5 Claims**

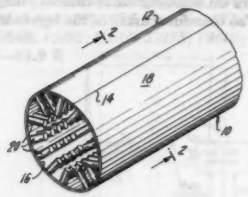
1. The method of manufacturing a heat exchange tube with internal heat exchange surfaces comprising the steps of:

providing an elongated flat sheet of heat exchange material having two parallel edges;

providing a plurality of individual heat exchange elements solid through their entire cross sections, each having a width which is a small portion of the width of said elongated flat sheet;

placing on one face of said sheet a plurality of said heat exchange elements so that said heat exchange elements are free of contact with each other and free of contact with any element other than said sheet so that the width of each of said heat exchange elements covers only a small portion of the width of said heat exchange material;

welding said plurality of heat exchange elements to said face of said sheet to form a web;



moving said two edges of said web together to envelop said elements, form a tube with said face forming the inside surface of said tube with said elements inside of said tube and bring said edges into proximity; and

welding said edges together to form a seam.

3,961,742

PARALLELEPIPEDAL PACKING CONTAINER

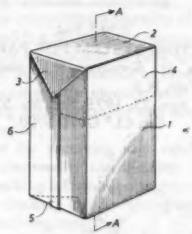
Olof Stark, Rydsgard, and Kjell Martensson, Malmo, both of Sweden, assignors to AB Ziristor, Lund, Sweden

Continuation of Ser. No. 464,676, April 26, 1974, abandoned. This application July 2, 1975, Ser. No. 592,651

Claims priority, application Sweden, May 30, 1973, 7306743

Int. Cl.² B65D *5/72, 5/42*

U.S. Cl. 229—17 R **4 Claims**



1. A parallelepipedal package having opposed end walls, opposed front and rear walls and opposed side walls adjoining said other walls, each side wall having a medial longitudinal face to face seal extending between said end walls and folded against a side wall of said package, one of said front and rear walls being provided with an overlappingly sealed portion extending transversely of said package across said one wall and extending from the edges of said one wall to said medial longitudinal face to face seal of each side wall.

3,961,743

PLASTIC BAG AND METHOD OF MANUFACTURE

John R. Hollowell, 22179 Long Blvd., Dearborn, Mich. 48124

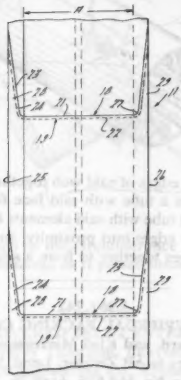
Filed July 22, 1974, Ser. No. 490,410

Int. Cl.² B65D *33/16*

U.S. Cl. 229—62 **1 Claim**

1. A flattened tubular plastic strip formed so that individual bags may be removed therefrom, comprising a plurality of heat seals and adjacent parallel perforations formed at equally spaced intervals along said strip, each heat seal and perforation having a central portion extending transversely across most of said strip, and ear portions extending almost at right angles to said central portions until the edges of said strip, whereby the bottom of each bag has a central portion extending straight across the bag for almost its entire width to maximize bag capacity, the length of said ear portions being suffi-

cient to form ears which may be tied together to close each bag after it is removed along a perforation from the strip, the sides of said strip being tucked in to form two inward folds with strip layers on opposite sides thereof, the layers being partially offset so that outer areas of the layers are exposed in



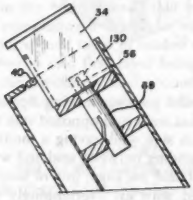
opposite directions, the transverse central portions of said heat seals and perforations extending at least to said exposed areas, the ear portions and the junctures between the ear and central portions of said heat seals and perforations being formed only in said exposed areas.

3,961,744

COIN COLLECTING SYSTEM FOR PARKING METERS

Andrew Kashuba, Jr., Secaucus, N.J., assignor to Henry R. Stiffel, River Vale, N.J.

Filed Apr. 23, 1975, Ser. No. 570,563
Int. Cl.² G07D 9/00
U.S. Cl. 232—16 **10 Claims**



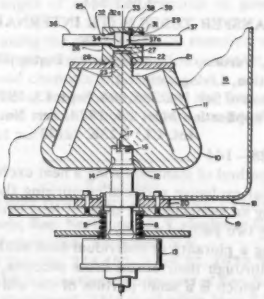
1. A coin collecting apparatus for automatically unlocking and opening locked coin boxes and during the opening of said box receiving and retaining the coins therefrom and after the box has been emptied the box is removed from the apparatus and during removal the box is closed and relocked, the collecting apparatus includes a receiving chute into which the locked box is placed and during a reciprocating push in, pull out operation this chute retains the box in its inserted and oriented condition while the box is unlocked, opened, closed and relocked, the chute having an opening associated therewith, said opening in communication with a coin accumulating means, the coin collecting apparatus including: (a) a guide chute having sides and a top and bottom surface providing a slide and guide means of determined extent; (b) an end member fixedly carried in said chute and substantially transverse to the axis of the chute; (c) a movable member carried in the chute and disposed intermediate the open end of the chute and the fixed end member; (d) sliding and guiding means for maintaining the movable member substantially normal to the axis of the chute while at both ends of its limit of movement and during movement of the movable member toward and from the fixed member; (e) biasing means for urging the movable member to and toward the open end of the chute; (f) a barrel cam carried by and with the movable member, said cam having a cam track formed to include a quarter turn helix with one end of the helix track portion continuing with a straight portion in axial alignment with the axis of the cam; (g) a cam follower in association with and in engagement with the cam track and so retained that with the movement of the movable member the barrel cam is rotated to correspond to the radial displacement of the cam track with reference to a theoretical line parallel to the axis of the cam; (h) a key associated with and rotatable with the barrel cam, said key oriented so as to enter the keyway of the lock of the coin box when said coin box is entered into the chute with the door thereof positioned downwardly and whereby when the coin box is entered in the chute the keyway of the lock of the coin box slides along the key to achieve the desired penetration of the keyway; (i) an interlock which includes a lock means which engages the barrel cam to prevent rotation thereof until the interlock is activated and said lock means being removed with and by bringing the coin box adjacent to the movable member and maintaining the coin box thereat during the key insertion into the lock of the coin box after which the face of the coin box as it moves forwardly urges the movable member toward the end member, said movement causing the cam follower to rotate the barrel cam and the associated key to turn the lock and release the door which opens into the opening in the guide wall and remains open during the movement of the cam follower in the straight portion of the cam track, and by and with the biasing means the movable member and coin box is moved toward the open end of the chute, the straight portion of the cam track enables the door to be fully closed by the chute guide means before the helix portion of the cam track is engaged to cause the key and lock to be turned to lock the coin box, and (j) an opening in the bottom guide wall and guide means of the chute, said opening corresponding to a gravitational opening of the door in the coin box to permit the door to swing downwardly and the coins in the box to fall from the open box.

3,961,745

CENTRIFUGE APPARATUS

Herschel E. Wright, Santa Clara, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 8, 1974, Ser. No. 458,837
Int. Cl.² B04B 7/06
U.S. Cl. 233—1 B **7 Claims**



1. A high speed centrifuge apparatus comprising:
a rotor adapted to carry samples to be centrifuged;
a vertical drive shaft having an end thereof adapted for coupling to said rotor for rotating said rotor on the rotational axis of said shaft;

a handle assembly attached to said rotor, said handle assembly including,

a centerpiece positioned on the rotational axis of said rotor and extending outwardly from said rotor on the opposite side thereof from said drive shaft, said centerpiece having a hole therethrough normal to the axis of rotation,

a safety link handle having a central portion fitting snugly in said hole in said centerpiece and two arms extending outwardly from opposite sides of said central portion through the openings in said hole in said centerpiece, said safety link handle being proportioned so that it is balanced when rotated with said rotor,

means for retaining said safety link handle within said hole in said centerpiece, and

one of said arms of said safety link having a section thereof close to said central portion designed and constructed of reduced tensile strength so as to withstand a rotational force less than the other arm and to rupture at a predetermined rotational velocity of said rotor whereby the outwardly extending portion of said one arm departs through said hole in said centerpiece thereby creating an imbalance condition causing said rotor and shaft to oscillate about the rotational axis thereby causing said rotor to depart from said vertical drive shaft.

3,961,746

CENTRIFUGE WITH A DEVICE FOR BLOCKING AND UNBLOCKING AN OPENING THEREOF

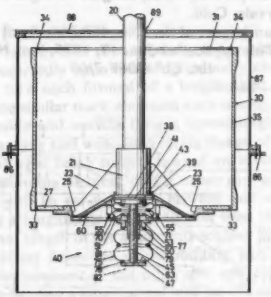
Wolfgang Werner, Braunschweig, Germany, assignor to Salzgitter Maschinen Aktiengesellschaft, Salzgitter, Germany

Filed June 28, 1974, Ser. No. 484,325

Claims priority, application Germany, June 29, 1973, 2333122

Int. Cl.² B04B *11/05*

U.S. Cl. 233—20 R **17 Claims**



1. In a centrifuge, particularly a sugar centrifuge, a combination comprising a centrifuge drum mounted for rotation about an upright axis and having a bottom wall provided with an opening; a closure member mounted for movement relative to said bottom wall between a first position in which it sealingly blocks said opening, and a second position in which it unblocks said opening; a guide rod projecting axially of said drum from said bottom wall; a sleeve slidably surrounding said guide rod axially adjacent said closure member; coupling means coupling said sleeve with said closure member for joint movement therewith; an expansible and collapsible bellows element cooperating with said sleeve to effect, when inflated, sliding of said sleeve along said guide rod until said closure member is in said first position; and connecting means for connecting said bellows element with the source of pressure fluid.

3,961,747

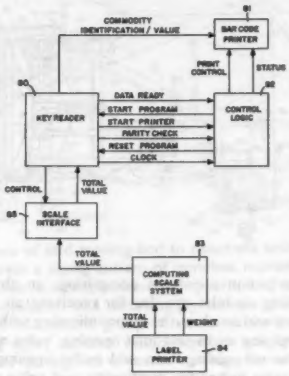
COMMODITY IDENTIFICATION APPARATUS

James R. Small, and Robert C. Meckstroth, both of Dayton, Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Apr. 30, 1975, Ser. No. 573,594

Int. Cl.² G06K *15/02*; G01G *23/38*, *19/40*; G06K *7/10*

U.S. Cl. 235—61.9 R **15 Claims**



1. Label printing apparatus comprising:

a commodity key comprising a plurality of rows of aperture spaces arranged in a plurality of columns, with one of said columns having an indicium in each space to serve as a clocking mark and with indicia in others of said spaces representing commodity identification information and partly checking information for said commodity identification information,

receiving means for receiving said commodity key and reading said commodity identification information and said parity checking information in response to the movement of said clocking indicia during the seating of said key in said receiving means,

first storage means for storing said commodity identification information and connected for recirculating said information therethrough without loss thereof,

second storage means for storing said parity information,

program control means for generating data reading strobe signals, parity checking strobe signals and data shifting clock signals,

data reading means responsive to said data reading strobe signals for progressively reading out the commodity identification stored in said first storage means,

means for transmitting said data shifting clock signals from said program control means to said first storage means and causing aforesaid recirculating shifting of said commodity identification information,

parity checking means responsive to said parity checking strobe signals for progressively reading out said parity checking information from said second storage means in synchronism with the reading out of said commodity identification information and progressively performing a parity check thereagainst,

a printer for printing a machine readable commodity identification code in response to the reading out as aforesaid of said commodity identification information,

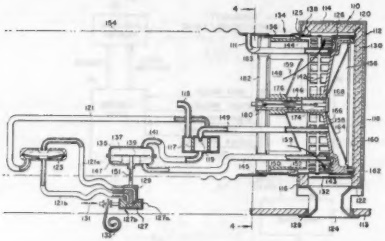
means for inhibiting the operation of said printer if said parity checking means detects a parity error, and

means for resetting said program control means to cause continuation of aforesaid reading, parity checking and printing operations so long as no parity error occurs and said printer is in condition for operation.

3,961,748
AIR DISTRIBUTION REGULATOR APPARATUS

John C. McNabney, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Division of Ser. No. 498,826, Aug. 19, 1974. This application June 30, 1975, Ser. No. 591,742
Int. Cl.² F24F 7/00
U.S. Cl. 236—49 13 Claims



1. Air distribution apparatus comprising: an air plenum chamber having air inlet opening for receiving air supplied under pressure and an air outlet communicating with a space; means for applying air to said inlet opening; valve means for controlling the air passing from said outlet opening; a fluid powered actuator means for positioning said valve means in response to a controlled fluid pressure; fluid control means for supplying a controlled fluid pressure to said actuator means including: a first element having first and second faces fixed in relation to each other at an oblique angle; a second element having first and second faces fixed in relation to each other at an oblique angle and disposed respectively in opposed relationships with said first and second faces of said element; a first vent passageway having a first port on said first face of one of said first and second elements; second vent passageway having a second port on said second face of one of said first and second elements; first means for adjusting the relative position of said first element through a first path that reduces or increases the spacing between said first faces of said first and second elements and simultaneously respectively increases or reduces the spacing between said faces of said first and second element in response to a first condition; second means for adjusting the relative position of said first and second elements through a second path non-parallel to said first path that reduces or increases the spacing between said first faces of said first and second elements and simultaneously respectively reduces or increases the spacing between said second faces of said first and second element in response to a second condition.

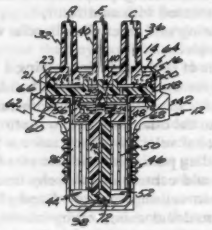
3,961,749
MULTIPLE PORT MULTIPLE TEMPERATURE THERMALLY RESPONSIVE VALVE

John W. Orcutt, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 10, 1975, Ser. No. 535,922
Int. Cl.² G05D 23/08
U.S. Cl. 236—101 D 10 Claims

1. A thermally responsive valve assembly comprising a valve body, said body having a plurality of passages therein and valve means including a thermally responsive bimetallic coil and rotatable passage switching means operably connected thereto, said rotatable passage switching means including a switch disc and a switch plate, said switch plate having a plurality of holes therein, each of said holes being a part of one of said passages, said switch disc having a plurality of linking passage portions and being rotatable to provide communication between the various holes which changes as said disc rotates, said bimetal coil rotating said passage switching means in response to temperature changes to effect a change in communication between said passages.

7. A thermally responsive valve assembly comprising a valve body having a first part at one end of said valve body and a second part at another end of said body, the first part of the body having a plurality of passages, each passage having an opening at one end adapted for connection to a fluid line and an opening at a second end to allow for communication between passages; and the second part containing a thermally

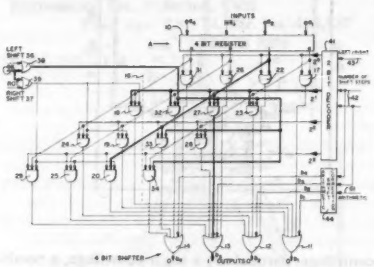


conductive portion and a valve means for providing communication between said passages, said valve means comprising a thermally responsive bimetal coil having a first end and a second end, means for fixedly securing said first end of said bimetal coil, and switch disc means rotatably mounted and operatively connected to said second end of said bimetal coil having a plurality of linking passage portions which contain said second end openings to provide communication between passages which is changeable upon rotation of said disc means.

3,961,750
EXPANDABLE PARALLEL BINARY SHIFTER/ROTATOR

Tich T. Duo, Cupertino, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 458,241, April 5, 1974, abandoned. This application Jan. 17, 1975, Ser. No. 542,080
Int. Cl.² G06F 7/00
U.S. Cl. 235—164 7 Claims



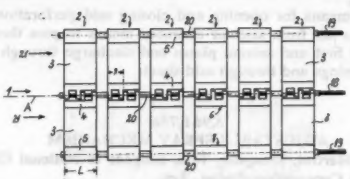
1. A parallel shifter having minimum time delay comprising: storage register means for storing a group of bits arranged in increasing weight; a group of OR gates having outputs corresponding to said bits after having been shifted a predetermined direction and number of shift steps; and means for shifting said stored group of bits including, a plurality of AND gates conceptually arranged in a skewed multiplication matrix each representing a cross product of said group of bits multiplied by a binary number representing a power of 2 such power being indicative of the number of shift steps, said multiplication of said group of bits and said binary number forming a final product having a least significant half and a most significant half, each of said AND gates having an output respectively connected to one of said OR gates which has the same

relative weight as such AND gate relative to the order of such AND gate in said least significant half of said final product or most significant half of said final product, said AND gates having inputs connected as follows—each AND gate is connected to a register bit which is the multiplicand for the cross product represented by such AND gate, first enabling means responsive to a left shift instruction is connected to AND gate inputs representing cross products corresponding to the least significant half of the final product, second enabling means responsive to a right shift instruction is connected to AND gate inputs representing cross products corresponding to the most significant half of the final product, and third enabling means having a plurality of outputs each respectively corresponding to one of said number of shift steps has each output respectively connected to a group of AND gate inputs representing cross products formed by a common multiplier bit of said binary number.

3,961,751
ARTIFICIAL CROSS-COUNTRY SKIING PATH

Jean Kessler, Grenoble, France, assignor to Societe Kessler S.A., Grenoble, France

Filed Mar. 27, 1975, Ser. No. 562,854
Claims priority, application France, Mar. 29, 1974, 74.11824
Int. Cl.² E01B *23/00*
U.S. Cl. 238—10 R **10 Claims**



1. A ski path comprising:

a pair of side-by-side rows of elongated tracks each formed as an upwardly open and longitudinally extending channel in turn each formed of a longitudinal succession of separate similar track elements each having a central web and inside and outside flanges upstandingly higher than and flanking said web, each inside flange of each element of each row being turned toward an inside flange of a corresponding element of the other row and being provided with an ear extending toward said other row and having a longitudinal length shorter than the overall longitudinal length of the element, each ear being longitudinally offset from the corresponding ear of the corresponding element of the other row and extending transversely beyond a longitudinal midline of said path extending generally between said rows; and

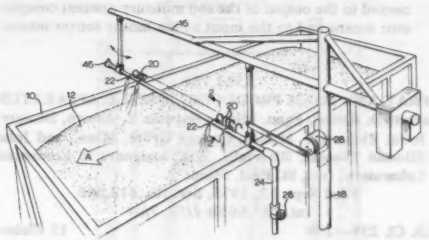
an elongated longitudinally extending connector member passing through said ears at said midline and interconnecting said corresponding elements in side-by-side relation into a chain with the upstanding flanges and webs of each side forming one of said channels.

3,961,752
METHOD AND APPARATUS FOR DUST CONTROL TREATMENT

Gerard Doeksen, Montrose, Canada, assignor to Cominco Ltd., Vancouver, Canada

Filed Mar. 28, 1975, Ser. No. 563,243
Claims priority, application Canada, July 22, 1974, 205262
Int. Cl.² B05B *3/14, 15/04;* B08B *3/02;* E01C *7/36*
U.S. Cl. 239—1 **9 Claims**

1. A method of applying a fluid treatment composition to a moving bed of particulate material which comprises spraying a major portion of a composition of an aqueous binder material and a wetting agent through a first group of nozzles and a minor portion of said composition through a second group of nozzles onto said moving bed, said nozzles being attached to the top of a common transverse spray header, oscillating said header across said moving bed during said spraying, directing through said first group of nozzles a plurality of substantially parallel vertical jets of said major portion onto

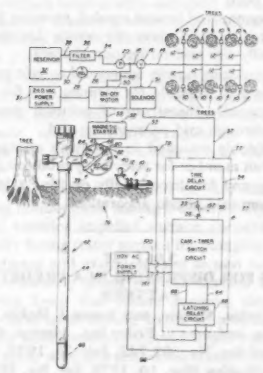


the surface of said moving bed to penetrate said surface and form therein a zigzag pattern of trenches, retaining treatment composition in said trenches until absorbed by adjoining particulate material, and directing by means of deflectors attached to said second group of nozzles said minor portion in adjoining spray curtains which together extend transversely across said moving bed to ensure wetting of areas between the zigzag trenches formed by jets from the first group of nozzles.

3,961,753
IRRIGATION SYSTEM CONTROLLER

Charles Kenneth Sears, Tucson, Ariz., assignor to International Electric Co., Chicago, Ill.

Filed Oct. 6, 1975, Ser. No. 619,854
Int. Cl.² A01G *25/16, 27/00*
U.S. Cl. 239—64 **13 Claims**



1. In an irrigation system wherein for purposes of soil moisture content control a constant speed motor drives a pump for dispensing water for preselected water control periods and a motor starter means operationally connects with said motor for selectively supplying electrical power thereto, the combination with said motor starting means of a soil moisture content controller comprising:

a. a soil moisture content sensing means installed at the point for desired soil moisture content control,

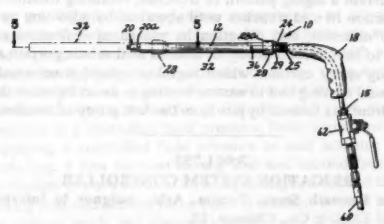
b. a transducer means operationally connected to the output of the soil moisture content sensing means and having a soil moisture content indexing output,
c. a soil moisture content single setpoint indexing means,
d. a soil moisture content comparator means operationally connected to the soil moisture content indexing output of the transducer means and to the output of the soil moisture content single setpoint indexing means, and
e. a water control period selector means operationally connected to the output of the soil moisture content comparator means and to the input to the motor starter means.

3,961,754

SPRAY AND FOAM PRODUCING NOZZLE APPARATUS

Garrett D. Kuhns, Egan, Minn.; Norman E. Astorp, Sumner, Iowa; Richard V. Mullen, Cottage Grove, Minn., and John Ellwood Thomas, Riverfalls, Wis., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed Sept. 12, 1975, Ser. No. 612,865
Int. Cl.² B05B 1/12, 7/04
U.S. Cl. 239—289 **15 Claims**



1. A hand-held spray and foam producing nozzle apparatus, comprising:
a. an elongate rigid conduit member having a passageway extending from an inlet port to an outlet port spaced from said inlet port;
b. a handle connected to said conduit member for enabling an operator to hand-carry the nozzle apparatus and to directionally aim said outlet port thereof;
c. a spray producing nozzle connected to said conduit at its said outlet port, suitable for forming and for directing a spray outwardly therefrom of solution passing under pressure through said passageway; and
d. means slidably attached in overlying engagement with said conduit member for selectively producing foam from said spray and for directionally ejecting said foam outwardly from said nozzle apparatus.

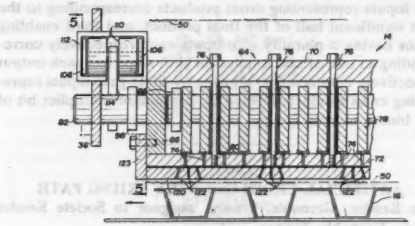
3,961,755

APPARATUS FOR DISPENSING IN A PREDETERMINED PATTERN

Richard L. Morine, Mentor, and James J. Hokes, Lakewood, both of Ohio, assignors to Fedco Inc., Mentor, Ohio

Continuation of Ser. No. 382,743, July 26, 1973, abandoned. This application Mar. 10, 1975, Ser. No. 556,870
Int. Cl.² B05B 7/00
U.S. Cl. 239—319 **5 Claims**

1. Apparatus for applying to a surface a relatively uniform layer or film of a relatively viscous fluid in a predetermined pattern, said apparatus comprising:
a sheet of foraminous material having first and second opposed sides and an area greater than said predetermined pattern;
first means for supporting said sheet with its first said facing and closely adjacent said surface;
second means for saturating said sheet with said fluid; and,
air discharge means mounted closely adjacent said second side of said sheet, said air discharge means including:
a first plate member extending generally parallel to said sheet and having a multiplicity of small, closely-spaced openings extending therethrough and laid out in a pattern corresponding to said predetermined pattern and directed toward the second side of said sheet;
a second plate member positioned generally parallel to and closely adjacent said first plate member on the side opposite said sheet, said second plate member having a multiplicity of relatively uniformly spaced perforations extending therethrough and directed toward said first plate member;
air chamber means enclosing said second plate member; and,
valve means for opening and closing said perforations to allow air from said air chamber means to pass through said first and second plates and discharge through said openings and through said sheet.

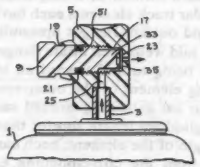


3,961,756

ADJUSTABLE-SPRAY MECHANISM

Leo A. Martini, Mesquite, Tex., assignor to National Chemsearch Corporation, Irving, Tex.

Filed Feb. 10, 1975, Ser. No. 548,515
Int. Cl.² B05B 7/32, 1/30, 1/34
U.S. Cl. 239—337 **4 Claims**



1. An improved adjustable spray tip for selectively varying the spray pattern from a wide angle misting spray to a concentrated stream, comprising,
bore button body having a bore therein for receiving an adjustable valve means, the internal end of the bor defining an end wall,
an outlet orifice communicating with the end wall of said bore and extending to the exterior surface of the button body for expelling the spray,
an adjustable valve means in said bore, said adjustable valve means including advancement-retraction means operatively associated therewith and with the bore for moving the valve means toward or away from said outlet orifice,
said adjustable valve means being of cylindrical configuration and including a nose surface at the end thereof proximate said outlet orifice,
fluid swirl means operatively associated with the outlet orifice for imparting a vortex flow to the fluid about the axis of the bore, and,

said fluid swirl means including a counterbore means of circular shape in the nose surface of said valve means, the counterbore means being recessed a predetermined depth in the nose surface,

fluid conduit means in the nose surface extending inwardly from the surface of the cylindrical valve means into tangential intersection with said circular counterbore means, the depth of said fluid conduit means being the same as said counterbore means, so that the entire volume of fluid introduced to the counterbore means is subjected to maximum centrifugal forces of rotation prior to escape through the outlet orifice,

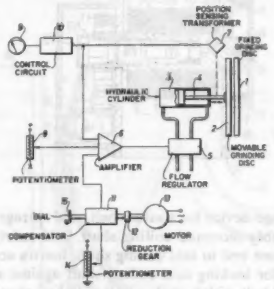
a fluid inlet passage communicating with the bore so that upon introduction of a fluid stream to the bore, the stream is caused to swirl about the end of the valve means adjacent the inlet orifice whereby advancement or retraction of the valve means with respect to the orifice produces a respective correlative stream-like or mist-like spray pattern.

3,961,757

METHOD AND MACHINE FOR REFINING WOOD CHIPPINGS, SHAVINGS, PAPER PULP AND THE LIKE

Torsten Lennart Berggren, Nassjo, Sweden, assignor to Cellwood Machinery AB, Nassjo, Sweden

Filed Apr. 2, 1975, Ser. No. 564,337
Int. Cl.² B27L *11/08*
U.S. Cl. 241—28 **19 Claims**



1. Method of refining wood chippings, shavings, paper pulp in high non-pumpable concentrations and the like by use of a refining machine which includes two relatively displaceable grinding devices which are rotatable relative to one another and which are each provided with grinding bodies thereon, the method comprising:

arranging said grinding devices to form a narrow slot-shaped grinding chamber between the grinding bodies of the two grinding devices, said grinding devices being relatively displaceable toward and away from each other so as to vary the size of said slot-shaped grinding chamber; and

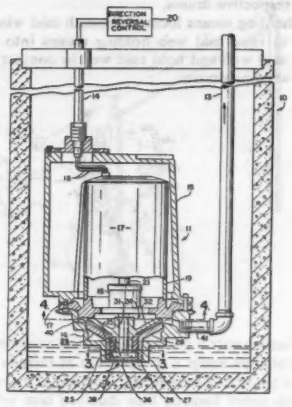
displacing a grinding device relative to the other as a function of the position thereof relative to the other grinding device and at a predetermined rate during the period of time the machine is in operation, said predetermined rate being independent of the relative positions of the grinding devices, to vary the distance between said grinding devices so as to compensate for wear of said grinding bodies of said grinding devices.

3,961,758

CENTRIFUGAL PUMP WITH INTEGRAL GRINDER

Arvid E. Morgan, Mansfield, Ohio, assignor to Peabody Barnes, Inc., Mansfield, Ohio

Filed Aug. 23, 1974, Ser. No. 500,106
Int. Cl.² B02C *18/06*
U.S. Cl. 241—46.11 **14 Claims**



1. Apparatus for pumping liquids and liquid slurries and for comminuting solid and semi-solid material contained therein comprising:

a housing defining a volute chamber and an outlet therefrom,

a drive motor,

a rotary drive shaft extending vertically downward from said motor,

a stator coaxial with said shaft and adapted for axial adjustment relative to said housing, said stator having an upwardly facing frusto-conical surface and an interior cylindrical surface coaxial with said shaft and having a plurality of axially extending slots formed therein,

means defining an inlet communicating with the lower ends of said slots in said stator,

a grinding member having an abrasive outer cylindrical surface mounted on the lower end of said shaft within said stator and cooperable therewith to comminute solid and semi-solid material passing upwardly from said inlet through said slots between said grinder element and said stator,

a centrifugal impeller mounted on said shaft above said grinding member and having a downwardly facing frusto-conical exterior impeller surface cooperable with said upwardly facing stator surface for pumping material radially outward and axially upward to said volute chamber, said downwardly facing impeller surface having radially extending lands that define pumping cavities therebetween, said lands having edges in cooperating relation with said slots to sweep past the upper ends of said slots and to shear solid and semi-solid matter contained in said slurry.

3,961,759

AUTOMATIC WEB-WINDING ROUND APPARATUS

Haruyoshi Fujiwara, Mihara, Japan, assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 13, 1974, Ser. No. 532,313
Int. Cl.³ B65H *17/08*
U.S. Cl. 242—66 **3 Claims**

1. An apparatus for starting a web wrapping a core on a two drum winder, said winder comprising a first winding drum and

a second winding drum, said winding drums being positionable on the same horizontal level,

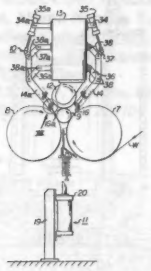
a rider roll nipping the core against said winding drums and being positionable above said winding drums,

first and second web directing members,

means to move said web directing members into contact with said rider roll and said winding drums, and means to move said members out of contact with said rider roll and said respective drums,

a web holding means located beneath said winding drums,

means to raise said web holding means into engagement with said web and hold said web in contact with one of said winding drums,



means to maintain said web holding means into engagement with said web thereby preventing the web from falling between said winding drums;

said first web directing member in its contact position being arranged to divert the web into the nip between said rider roll and said core,

said second web directing member in its contacting position being arranged to divert the web into the nip between said second winding drum and said core,

a third web directing means being arranged to direct the web upwardly into the nip between said first winding drum and said core, said third web directing means being said web holding means, said first, second and third web directing means thereby wrapping the web around said core without utilizing any external fastening means.

3,961,760

MAGAZINE FOR X-RAY FILM SHEETS, COMPRISING A ROTATABLE STORAGE DRUM

Theodorus Franciscus Arnoldussen; Antonius Johannes Ludovicus Maria Hoeks, and Norbertus Johannes Josephus Liebrand, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,375

Claims priority, application Netherlands, Apr. 18, 1973, 7305412

Int. Cl.² B65H *17/06*

U.S. Cl. 242—67.3 R **8 Claims**

1. A magazine for taking up and giving off x-ray film sheets, comprising:

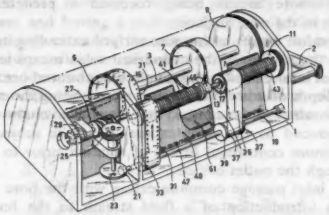
rotatable storage drum means;

first and second flexible belts attached at one end to said drum means, rotation of said drum means wrapping and unwrapping said belts about said drum means at spaced apart locations;

first and second independently rotatable auxilary drums positioned with respect to said storage drum means to take up therefrom and give off thereto said first and second belts respectively;

first and second resilient elements cooperating with said first and second auxiliary drums respectively for independently applying substantially constant and substantially equal tension to said first and second belts respectively;

means for rotating said storage drum means; and



means for guiding film sheets to and from said storage drum means, so that film sheets are taken up and given off by clamping and unclamping thereof about said storage drum means with said wrapping and unwrapping belts.

3,961,761

STORAGE DEVICE FOR A SAFETY BELT

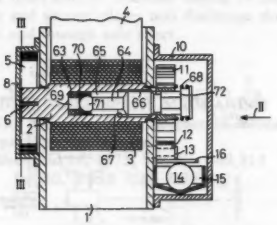
Josef Wiesböck, Dachau, Germany, assignor to Hans Kolb KG, Munich, Germany

Filed Jan. 20, 1975, Ser. No. 542,247

Claims priority, application Germany, Jan. 21, 1974, 2402650

Int. Cl.² B65H *75/48*

U.S. Cl. 242—107.4 A **5 Claims**



1. A storage device for a safety belt, said storage belt including a rotatably mounted coiling shaft, said safety belt being secured at one end to said coiling shaft, inertia actuated locking means for locking said coiling shaft against rotation in a direction of belt withdrawal, a bolt member coupled between said coiling shaft and said locking means, and an energy absorbing cushion, said bolt member being axially movable against said energy absorbing cushion through turning of said coiling shaft due to belt withdrawal following actuation of said inertia means.

3,961,762

WIRE DRAG UNIT

John C. Diepeveen, 1737 Kimberly Drive, Sunnyvale, Calif. 94087

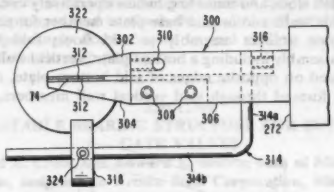
Continuation of Ser. No. 471,525, May 20, 1974, abandoned, which is a continuation of Ser. No. 307,896, Nov. 20, 1972, abandoned, which is a division of Ser. No. 133,932, April 14, 1971, Pat. No. 3,709,422. This application June 17, 1975, Ser. No. 587,753

Int. Cl.² B65H *59/22*

U.S. Cl. 242—149 **2 Claims**

1. A wire drag unit for a wire bonding machine comprising: a support; a first jaw rigidly secured in a generally horizontal position to the support; an elongated second jaw; a generally horizontal pin pivotally mounting the second jaw intermediate its ends on the support and above the first jaw to permit rotational movement of one end of the second jaw toward and

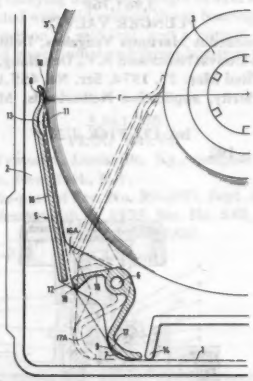
away from the first jaw, whereby a wire can be clamped between the jaws; a weight; and means coupled to the opposite end of the second jaw, spaced below said first jaw and extending through and beyond the vertical plane in which said pin is disposed for adjustably supporting said weight, said weight normally being on the side of said plane on which said one end of the second jaw is disposed.



3,961,763
DEVICE FOR GUIDING A MAGNETIC TAPE IN A RECORDING CASSETTE

Stanley Brice Lascelles Somers, 5, Quai du Mont-Blanc, Geneva, Switzerland

Filed June 3, 1974, Ser. No. 476,155
Claims priority, application Switzerland, June 8, 1973, 8411/73
Int. Cl.² G03B *1/04*; G11B *15/32*, *23/04*
U.S. Cl. 242—199 14 Claims



1. A one-piece device for guiding a tape in a two-spool cassette, comprising;

a lever;

means for mounting the lever for pivotal movement alternately toward and away from a spool and for defining an inward side of the lever facing the spool and an outward side of the lever facing away from the spool, the lever having a first end portion at least relatively adjacent the spool and a second end portion remote from the spool;

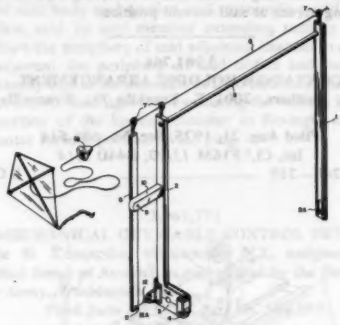
means on the relatively adjacent end portion for guiding a tape along the inward side, adjacent to the spool; and

means on the remote end portion for guiding the tape along the outward side, between another spool and the relatively adjacent end portion.

3,961,764
TOY SPACE VEHICLE PAYLOAD FOR A KITE

John E. Keough, Ogden, Utah, assignor to The Raymond Lee Organization, Inc., a part interest

Filed Oct. 25, 1974, Ser. No. 517,902
Int. Cl.² A63H *27/08*
U.S. Cl. 244—155 R 6 Claims



1. In combination with a kite having a string attached:

a payload shaped in the form of a space vehicle having a turbine rotor to aid in ascent and descent of the vehicle;

a carrier for said payload, said payload being detachably secured to said carrier, said carrier being attached to the string of said kite and bearing the payload upwardly towards the kite under the influence of the wind, said carrier including first and second rectangular payload support struts having slide clips at one end, said string extending slidably through said clips, and a connecting bar parallel to the string, said connecting bar extending transversely between said struts and secured at each end to the one end of the corresponding strut, the first strut having a longitudinally extending slot in the other end, the second strut having at its other end a notched release jaw supported in a hinge, said payload being supported by the notch in the jaw and by the slot in the first strut; and

a stop mounted on the string which when touched by the carrier causes said playload to be released from the carrier and to descend to earth under the influence of gravity.

3,961,765
MULTI-POSITION CONTAINER HOLDING ARRANGEMENT

Alvin O. Brothers, 2001 E. Franklin St., Evansville, Ind. 47711

Filed Dec. 26, 1973, Ser. No. 427,991
Int. Cl.² F16M *13/00*
U.S. Cl. 248—126 7 Claims

1. A multi-position container holding arrangement comprising a framework having legs supporting a container-receiving

assembly at a first upstanding position, scaffolding, and releasable positioning means extending from said framework and selectively mounting said framework on said scaffolding at a tilted position of said framework to define a second container-receiving assembly position, said framework having means including first and second sleeves for receiving said container-receiving assembly at said first and at said second position, and means including a third sleeve receiving said releasable positioning means at said second position.

3,961,766

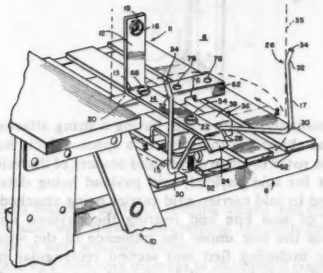
CONTAINER HOLDING ARRANGEMENT

Alvin O. Brothers, 2001 E. Franklin St., Evansville, Ind. 47711

Filed Aug. 21, 1975, Ser. No. 606,514

Int. Cl.² F16M *13/00*; B44D *3/14*

U.S. Cl. 248—210 **8 Claims**



1. A container-receiving arrangement adapted for clamping to an upwardly extending support of a ladder and to an apertured horizontal work surface of a ladder, said arrangement comprising container-receiving means having at least first vertical and horizontal members, first bracket means for attachment to said first horizontal member, first clamp means for attachment through said work surface aperture to said first bracket means for clamping said horizontal work surface between said first bracket means and said first clamp means for removably clamping said container-receiving means to said horizontal work surface, second bracket means adapted for selective attachment to either said first vertical or horizontal member when said container-receiving means is clamped to said upwardly extending support or said horizontal work surface respectively, and second clamp means for removable attachment to said second bracket means for removably clamping said container receiving means to said upwardly extending support of said ladder when said second bracket means is attached to said vertical member and said second clamp means is attached to said second bracket means with said support therebetween.

3,961,767

VEHICLE BUCKET SEAT APPARATUS AND ASSEMBLY METHOD THEREFOR

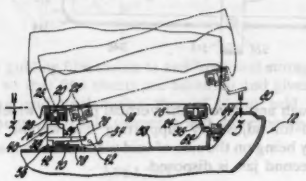
William C. Albrecht, Warren, and David L. Clark, Grosse Pointe Woods, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed June 11, 1975, Ser. No. 585,840

Int. Cl.² A62B *35/00*; B65J *1/22*

U.S. Cl. 248—503 **4 Claims**

1. For use with an automotive underbody including a floor and a rocker panel, and with an automotive bucket seat having inboard and outboard channels and associated adjustment rollers and tracks operatively connected thereto, a seat mounting arrangement comprising an anchor bracket assembly secured to said floor; a locator bracket assembly secured to the inboard adjustment track; and a pair of mounting flanges secured to the outboard adjustment track; said anchor bracket assembly including a base plate member, side walls formed on opposite edges of said base plate member, horizontal open-ended aligned slots formed in each of said side walls, pilot means formed adjacent the open end portion of said open-ended slots, and mounting means operatively connected to said side walls and/or said base plate member for securing said anchor bracket assembly to said floor; said locator bracket assembly including a bottom plate, vertical wall members formed on opposite edges of said bottom plate, aligned openings formed through said vertical wall members, a rod



mounted in said aligned openings and having the ends thereof extended beyond said openings and adapted to being piloted by said pilot means into said respective horizontal open-ended slots, resilient means operatively connected to said rod and adapted to cause said rod-ends to be securely mounted in said respective open-ended slots, and mounting straps formed on the upper edges of said vertical wall members and secured to said inboard adjustment track; and said pair of mounting flanges on said outboard adjustment track being secured to a pair of mounting surfaces formed at a predetermined location on an inboard side of said rocker panel.

3,961,768

PLUNGER VALVES

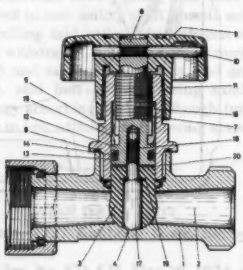
Hubertus Leonardus Martinus Veugelers, Delft, Netherlands, assignor to Conval Nederland N.V., Den Haag, Netherlands

Filed Mar. 27, 1974, Ser. No. 455,190

Claims priority, application Netherlands, Mar. 30, 1973, 7304432

Int. Cl.² F16K *3/28*

U.S. Cl. 251—191 **3 Claims**



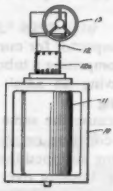
1. Plunger valve comprising a body having an essentially straight through passage and a bore extending substantially normal thereto into a head piece of the body, a plunger of a rubbery or synthetic material movable in said bore with a sliding fit, said plunger being mounted with a sliding fit on a retaining fit fixed to a screw threaded stem cooperating with an internal screw thread of the head piece for up and down movement of said stem with said pin and plunger, the end of said plunger facing away from said head piece being dome-shaped and engageable in a shallow recess of a complimentary

shape in the opposed wall part of said through passage, said dome-shaped end having an open bore for said retaining pin which has a retracted position within said bore when said dome-shaped head is not in contact with said opposed wall part but which engages said wall part when the stem is screwed down to close said passage under limited elastic deformation of said plunger, and in which the head of said retaining pin is correspondingly dome-shaped to said shallow recess in the wall of the through passage.

3,961,769
ADJUSTABLE BEARING STRUCTURE FOR BUTTERFLY GATE VALVES

Harold E. Crow, and Edward L. Brown, both of Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Filed Apr. 9, 1973, Ser. No. 349,066
Int. Cl.² F16K 1/22
U.S. Cl. 251—305 **8 Claims**

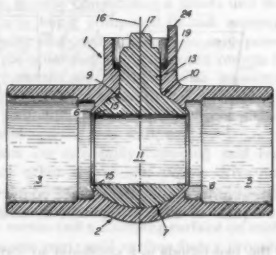


1. In a butterfly gate structure adapted to be mounted in an aperture in a conduit or the like, a leaf having a central vertical shaft extending thereabove and therebelow, a radial bearing for the lower end of said shaft, a radial bearing and a vertical thrust bearing for the upper portion of said shaft, said thrust bearing carrying the entire weight of said leaf and shaft, means associated with said vertical thrust bearing for adjusting the vertical position of said leaf, and a bonnet covering and protecting said upper radial and thrust bearings and adjusting means.

3,961,770
PLUG VALVE

Thomas J. Wrasman, Louisville, Ky., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 394,037, Sept. 4, 1973. This application Feb. 7, 1975, Ser. No. 548,157
Int. Cl.² F16K 5/00
U.S. Cl. 251—315 **24 Claims**



1. A valve comprising:

a unitary housing of moldable non-metallic material provided with inlet and outlet channels having peripheries and including end sections formed as homogeneous parts of said housing for connection to communicating conduits on opposite sides of said valve;

a plug mounted for rotary movement at a position between said inlet and outlet channels and having a through passageway including an orifice with a periphery smaller than the periphery of the adjoining channel;

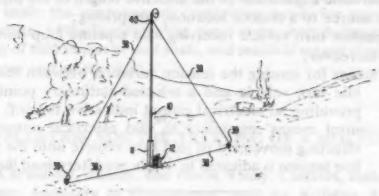
a body seal portion formed as a homogeneous part of said housing and being in sealing engagement with portions of the plug remote from said orifice; and

an annular lip seal member formed as a homogeneous part of said body seal portion and surrounding said plug orifice, said lip seal member extending radially inwardly from the periphery of said adjoining channel to a position adjacent the periphery of said orifice and being sufficiently thin in the direction of fluid flow through the valve to form a fluid tight seal by causing the radially innermost portion of the lip seal member to flexingly engage an outer surface portion of the plug.

3,961,771
MECHANICAL GUY CABLE CONTROL DEVICE

Archie M. Kumasaka, Middletown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 18, 1975, Ser. No. 588,089
Int. Cl.² B66D 1/26
U.S. Cl. 254—184 **10 Claims**



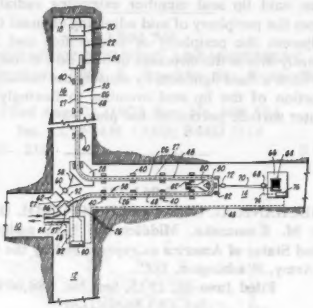
1. A guy element control mechanism for vertically extensible and retractable structures subject to varying wind loads during extension and retraction, said mechanism comprising a support means adapted to be fixed near the base of a vertically extensible and retractable structure, a pair of opposing flexible guy elements having corresponding ends adapted for attachment to a top section of a vertically extensible and retractable structure, guide means for said flexible guy elements positioned substantially equal distances from opposite sides of a base of a structure, a pair of capstans on the support means and each receiving convolutions of one of said flexible guy elements, storage reel means for the flexible guy elements on the support means in spaced relation to the capstans and receiving the other corresponding ends of the flexible guy elements to complete a closed loop guy system with a vertically extensible and retractable structure, a pair of one way freewheeling and one way locking rotary brake assemblies on the support means each having input and output rotary components, said capstans being secured to said input components of the brake assemblies to turn therewith, and a differential gear means disposed between said brake assemblies including gear components drivingly coupled with said output components of the brake assemblies, the output components of the brake assemblies being in back-to-back relationship axially on said support means, said brake assemblies being operable when the input torque of a given capstan is greater than the input torque of the other capstan.

3,961,772

CONTROL SYSTEM FOR POSITIONING EXTENSIBLE PIPELINE SYSTEM

William T. Sweeney, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Nov. 4, 1974, Ser. No. 520,312
Int. Cl.² B66D 1/48
U.S. Cl. 254—173 R 9 Claims



1. A control system for automatically maintaining proper alignment and tension in a flexible pipeline of the type which is mobilely supported and of relative large diameter for carrying slurried particulate matter, wherein a 180° loop is formed for movable adjustment of the effective length of the pipeline from source to a remote location, comprising;

a mobile turn vehicle receiving said pipeline loop movably thereover;

means for sensing the tension variation between the mobile turn vehicle and a selected stationary point and providing an electrical output indicative thereof; and

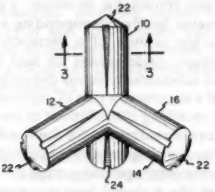
control means responsive to said electrical output for effecting movement of said turn vehicle until the pipeline tension is adjusted to within predetermined limits.

3,961,773

TRACTION DEVICE

Max L. Faulkner, 2000 W. 92nd Ave., Space 25, Denver, Colo. 80221

Filed July 14, 1975, Ser. No. 595,844
Int. Cl.² F04H 17/00
U.S. Cl. 256—1 4 Claims



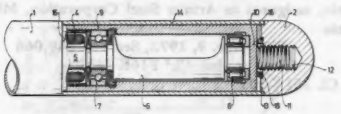
1. A disposable device adapted to be used in relatively large numbers with automobile tires in place of using tire chains on icy roads, said device comprising a polymeric solid body having four like solid legs which are interconnected and integral, all of the legs having one end in common, the opposite ends of all legs being pointed, said legs extending outward in four different directions and being separated by 120° with respect to each other, each three adjacent pointed ends defining a plane whereby four intersecting planes defining a regular tetrahedron are formed, each pointed end defining a different vertex thereof, each leg having a plurality of equidistantly spaced longitudinally extending grooves in the outer surface.

3,961,774

VIBRATORY COMPACTOR

Gotthilf Strohbeck, Leonberg, and Eugen Stahle, Magstadt, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 11, 1974, Ser. No. 531,617
Claims priority, application Germany, Jan. 7, 1974, 2400592
Int. Cl.² B01F 11/00
U.S. Cl. 259—1 R 11 Claims



1. A vibratory compactor for compacting of flowable concrete and the like, comprising a tubular housing provided with an end portion having an axial end; vibration-producing means in said housing

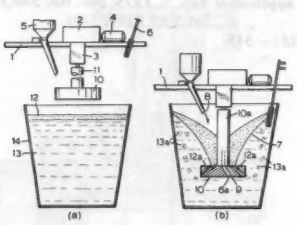
and operative to cause the same to vibrate so as to effect compacting of concrete or an analogous flowable mass when said housing is dipped thereinto; a protective sleeve surrounding said housing over at least part of the axial length thereof, so that when the housing is dipped into the mass to be compacted it will be the sleeve that is subjected to wear and the housing will be protected by the sleeve, said sleeve having a portion axially adjacent said axial end; and an end cap mounted on said end portion and urging said portion of said sleeve against said axial end of said end portion of said housing.

3,961,775

METHOD AND APPARATUS FOR LIQUID MIXING

Frank Markus, Burlington, Canada, assignor to The Steel Company of Canada, Limited, Hamilton, Canada

Filed Nov. 25, 1974, Ser. No. 527,026
Claims priority, application United Kingdom, Nov. 28, 1973, 55297/73
Int. Cl.² B01F 7/26
U.S. Cl. 259—24 6 Claims



1. A method of increasing the surface contact between two immiscible liquids of different specific densities, comprising the steps:

placing the two liquids in a container to form an interface with the less dense liquid above the interface and the more dense liquid below the interface,

providing a rotor of substantially circular outline having generally an upper face and a lower face, the rotor having a diameter of at least about one-third of the container internal diameter, the rotor having at least one internal passageway which opens at one end through the upper

face at a first location adjacent the rotor axis, the other end of the passageway opening at a second location on the rotor axis that is said first location,

inserting said rotor into said container sufficiently far to bring said upper face beneath said interface when the liquids are at rest, the axis of the rotor being generally vertical,

and rotating the rotor about its axis at a speed sufficient to draw a part of the interface down to the upper face of the rotor, whereby the less dense liquid passes into said one end of said passageway and is pumped through said passageway into said more dense liquid.

3,961,776
MIXING AND KNEADING DEVICE

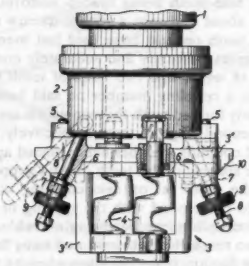
Kurt Sperrle, Stuttgart, Germany, assignor to Werner & Pfleiderer, Stuttgart, Germany

Filed June 19, 1974, Ser. No. 480,970

Claims priority, application Germany, July 28, 1973, 2338456

Int. Cl.² B29B 1/10

U.S. Cl. 259—192 **5 Claims**



1. A mixing and kneading device comprising in combination:

a power drive means including a motor, a gearing and a housing for said motor and gearing;

a receptacle for mixing and kneading therein a supply of material and having a side wall and end walls;

rotary mixing and kneading means within said receptacle and journalled in said end walls thereof, said mixing and kneading means being releasably coupled to said power drive means thereby constituting a power unit therewith, said receptacle being composed of two separate parts, one part being disposed adjacent to said power drive means and the other part being disposed remote from the power drive means and in lengthwise superimposition with said one part, said adjacent one part including one of said end walls and said remote other part including the other end wall and the side wall; and

clamping means for releasably clamping said receptacle parts to each other and to said power drive means for support by the same, said clamping means including at least one elongate member hinged at one end to said power drive means and a clamping surface on said remote other receptacle part, said surface being provided on a lateral protrusion of said side wall, and said elongate clamping member being swingable into and out of clamping engagement with said clamping surface, engagement of the clamping member with said surface clamping the two separate receptacle parts to each other and jointly to the power drive means and disengagement of the clamping member freeing both parts of the receptacle from each other and from the power drive means.

3,961,777
APPARATUS FOR THE REGULATED COOLING OF HOT OBJECTS FOR QUENCHING OR HARDENING PURPOSES

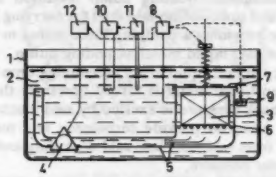
Birger David Lineberg, Koping, Sweden, assignor to AB Volvo, Goteborg, Sweden

Division of Ser. No. 381,068, July 20, 1973. This application May 10, 1974, Ser. No. 468,884

Claims priority, application Sweden, July 28, 1972, 9914/72

Int. Cl.² C21D 1/64

U.S. Cl. 266—114 **7 Claims**



1. In apparatus for the regulated cooling of hot objects for quenching or hardening purposes, comprising a container with a liquid cooling agent therein, means for regulating the temperature of the cooling agent, means for moving said agent through a circulation path within said container, a hollow shaft in the container defining a portion of the path, and means for inserting an object to be cooled into the shaft in direct heat exchange relationship with the liquid cooling agent in the shaft; the improvement comprising means for varying the pressure of the liquid cooling agent in the shaft during said cooling of said object in said shaft, and sealable means closing the upper end of the shaft.

3,961,778
INSTALLATION FOR THE TREATING OF A MOLTEN METAL

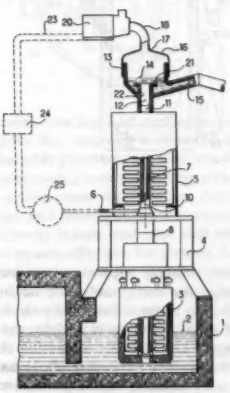
Henri Carbonnel, Antony, and Pierre Vaury, Clamart, both of France, assignors to Groupement pour les Activites Atomiques et Avancees, Le-Plessis-Robinson, France

Filed May 28, 1974, Ser. No. 473,980

Claims priority, application France, May 30, 1973, 73.19774

Int. Cl.² C22B 21/06

U.S. Cl. 266—217 **9 Claims**



1. An installation for the industrial treating of a molten metal comprising in combination:

a furnace for holding said liquid metal,

a duct mounted on said furnace and extending upwardly therefrom and formed of a refractory substance having a predetermined porosity,

a sealed metallic tube surrounding said duct, spaced therefrom and connected to a source of treatment gas under pressure,

a liquid metal ascending pump immersed in said molten metal below said duct and operatively coupled thereto for forcing under pressure molten metal through said duct for treatment by said gas, said duct being connected at its upper end to a decanting and degassing tank,

an electromagnetic treating pump mounted above said furnace and surrounding said duct for carrying the molten metal for providing a pumping force acting in opposition to that of said liquid metal ascending pump,

the capacity of said liquid metal ascending pump being such that when liquid metal is forced upwardly through said duct, a back pressure is exerted by said electromagnetic treating pump to provide turbulence and metal is discharged from said duct into said decanting and degassing tank under pressure,

and said installation further comprising a treatment gas high-discharge pump at the upper end of said decanting and degassing tank for lowering the pressure of the treatment gas within said decanting and degassing tank after gas treatment of the metal.

3,961,779

APPARATUS AND METHOD FOR REFINING A METAL MELT

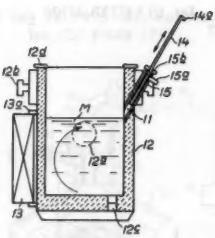
Magnus Gustav Georg Tiberg, Hallefors, and Jan B:Son Uggla, Vasteras, both of Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 14, 1974, Ser. No. 523,886

Claims priority, application Sweden, Nov. 14, 1973, 7315403

Int. Cl.² C21C 7/00

U.S. Cl. 266—225 **7 Claims**



1. A metal melt refining apparatus comprising a tiltable ladle for containing the melt, said ladle having a side wall upwardly extending to a rim substantially above the top surface of said melt when the ladle is upright, means for tilting said ladle to a degree substantially increasing the area of said surface without the surface extending above said rim, and at least one downwardly pointing nozzle positioned through said side wall and opening therethrough at a position above the melt's said top surface when said ladle is upright and below this top surface when the ladle is tilted by said means.

3,961,780

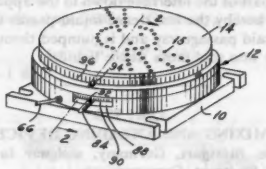
PRECISION ROTARY INDEXING FIXTURE

Joseph J. Saj, Detroit, Mich., assignor to U.S. Industries, Inc., Ferndale, Mich.

Filed Mar. 19, 1975, Ser. No. 559,659

Int. Cl.² B23Q 3/18

U.S. Cl. 269—64 **15 Claims**



1. A precision rotary indexing fixture for workpieces, comprising: a base; a plate having a support face on which a workpiece is adapted to be mounted, said plate being journalled on said base for rotation about an axis extending transversely to the plane of said support face; means connecting said plate and base for preventing relative movement thereof along said axis; a first narrow ring of accurately formed teeth on said support plate, said teeth being spaced uniformly apart and concentrically about said axis; a second narrow ring of accurately formed teeth on said base, said last mentioned teeth being spaced apart uniformly and accurately concentric with said first ring of teeth, said two rings of teeth facing in the same direction; a coupling member on said base having two sets of accurately formed teeth thereon which are aligned with the first and second rings of teeth respectively; the teeth of one set on said coupling member being spaced apart to correspond with the spacing of the teeth on said support plate and the teeth of the other set on said coupling member being spaced apart to correspond with the spacing of the teeth on said base, said coupling member being movable on said base to shift said two sets of teeth toward and away from the rings of teeth on the support plate and base whereby to mesh with the latter teeth and thereby retain said top plate and base against relative rotary movement; and means for moving said coupling member to bring said teeth into and out of said meshing engagement.

3,961,781

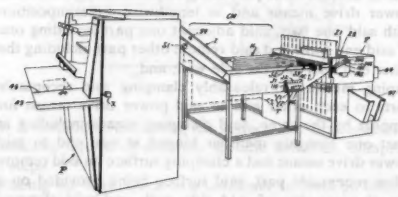
FOLDABLE-SHEET PROCESSING SYSTEMS

Roger S. Funk, Hollcong, Pa., assignor to R. Funk & Co., Inc., Doylestown, Pa.

Continuation of Ser. No. 873,454, Nov. 3, 1969, abandoned. This application Feb. 23, 1973, Ser. No. 335,020

Int. Cl.² B41F 13/56

U.S. Cl. 270—20 **20 Claims**



1. A continuous automatic print system for making prints and for folding the prints comprising a printing machine for making prints of different sizes, having an exit opening for the prints, a print folding machine having means for folding the prints, irrespective of size, into packets of uniform size, said folding means including a plurality of selectively operable

folding units; conveyor means for conveying the prints from the exit opening of the printing machine to said folding machine along a conveying path, means for sensing print size along said conveying path in advance of any of said folding units, and means coupled with a plurality of said folding units and operated by the sensing means to selectively actuate said folding units so as to fold successive prints irrespective of size into packets of uniform size.

3,961,782

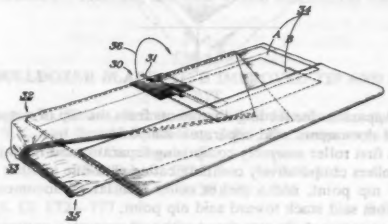
AID FOR FOLDING SHEETS AND THE LIKE

Edna Earl Lowry, 7308 Coronet, Tarrant County, Forth Worth, Tex. 76118

Continuation-in-part of Ser. No. 303,064, Nov. 2, 1972, abandoned. This application Oct. 23, 1974, Ser. No. 517,329

Int. Cl.² B65H *45/00*

U.S. Cl. 270—61 R **5 Claims**



1. Apparatus for folding sheets and pillow cases into unitary assemblages of a uniform size comprising:

a rigid board member of relatively thin thickness having top and bottom flat surfaces and four straight peripheral edge surfaces including first and second pairs of opposite generally parallel edge surfaces, and

a pair of flexible tab members mounted on said board member with one tab member being mounted along one of the opposite generally parallel edge surfaces of one of the pairs of edge surfaces and extending outwardly therebeyond and the other tab member being mounted along the other one of the opposite generally parallel edge surfaces of the one of the pairs of edge surfaces and extending outwardly therebeyond.

3,961,783

ENDLESS BELT FOLDER

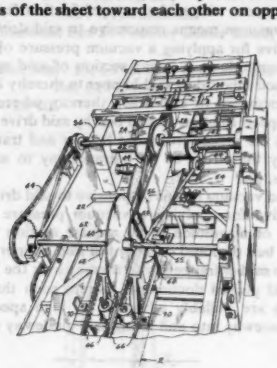
John F. Beaudoin, Milwaukee, Wis., assignor to Pratt Manufacturing Corporation, Milwaukee, Wis.

Filed Mar. 12, 1975, Ser. No. 557,549

Int. Cl.² B65H *45/22*

U.S. Cl. 270—66 **9 Claims**

1. Folding apparatus for sheet material comprising a first endless belt having an exposed sheet-engaging face with a permanent groove therein, a narrow second endless belt having an exposed sheet-engaging face with a permanent longitudinal ridge, and means for mounting said belts for conjoint movement with portions of said exposed faces in longitudinal linear engagement along a linear folding path, with the ridge of the second belt in interfitting engagement with the groove of the first belt to receive flat sheet material therebetween for folding of opposite sides of the sheet material toward each other, the groove of the first belt being a substantial depth and the ridge of the second belt projecting a substantial distance into said groove, and said ridge and groove being sized and shaped relative to one another to cause partial folding of said opposite sides of the sheet toward each other on opposite sides



of said narrow second belt and means for completing said folding.

3,961,784

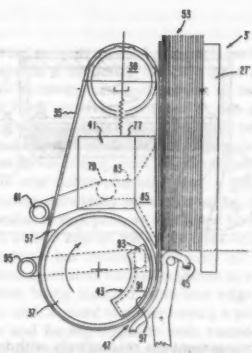
DOCUMENT TRANSPORT APPARATUS HAVING A VACUUM ASSISTED FRICTION FEEDER

Nitin M. Sevak, Westland, and Chauchang Su, West Bloomfield Township, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 3, 1975, Ser. No. 554,660

Int. Cl.² B65H *3/12*

U.S. Cl. 271—94 **22 Claims**



1. In document reading and sorting apparatus having a document hopper for receiving a stack of documents to be readably and sortably processed, at least one document output stacker, guideway means communicating with said hopper and said stacker, a document read station disposed along said guideway means, and drive means for transporting documents along said guideway means apd into said stacker, improved document feed means effective for picking documents one at a time from said hopper and for advancing said picked documents at high speed into said guideway means, said improved document feed means comprising:

a. a rotatably mounted apertured friction feed belt responsive to said drive means and cooperably disposed relative to the leading document of a said stack of documents received within said hopper,

b. a biasing member disposed within said hopper and effective for contacting the trailing document of said stack of documents and for applying a nominal biasing force to

said stack to thereby urge the leading document thereof into contact with said apertured friction feed belt,

c. first vacuum means responsive to said drive means and effective for applying a vacuum pressure of a first order of magnitude to a linear section of said apertured belt disposed inboard of said hopper to thereby lock the leading document of said stack thereto, whereby upon the high speed rotation of said belt by said drive means documents are picked from said hopper and transported outwardly therefrom to an entranceway to said guideway means, and

d. second vacuum means responsive to said drive means and effective for applying a vacuum pressure of a second order of magnitude to an arcuate section of said apertured belt disposed outboard of said hopper and contiguous to said entranceway to thereby lock the leading edges of said picked documents thereto such that said documents are pullably advanced at high speed from said entranceway into and along said guideway means.

3,961,785

ARRANGEMENT FOR RESPECTIVELY WITHDRAWING A SINGLE FILM SHEET FROM A STACK OF DIRECTLY LOOSELY SUPERIMPOSED FILM SHEETS

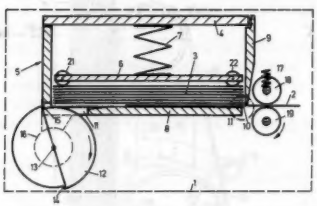
Arthur Gall, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Sept. 26, 1974, Ser. No. 509,727

Claims priority, application Germany, Sept. 29, 1973, 2349097

Int. Cl.² B65H *3/06, 3/46*

U.S. Cl. 271—119 **10 Claims**



1. In an arrangement for respectively withdrawing a single film sheet from a stack of directly loosely superimposed film sheets, particularly for use in X-ray filming apparatus, including a magazine having said stack of film disposed therein; means for pressing said stack of film sheets against the floor of said magazine; a calibrated withdrawal slot formed in a sidewall of said magazine in the plane of the extreme film sheet located on the floor of said magazine; and means for conveying the particular film sheet located on the floor of said magazine through said withdrawal slot, the improvement comprising: said magazine floor forming a boundary edge for said calibrated withdrawal slot; and a step roll projecting into said magazine through an aperture formed in the floor of said magazine in the region of an edge of said film sheet located on the floor of said magazine remote from said withdrawal slot, said step roll having the axis thereof oriented in parallel to said boundary-forming edge, said magazine floor in the region of said withdrawal slot being set back from the calibrated withdrawal slot in a direction opposite to the withdrawing direction of said extreme film sheet.

3,961,786

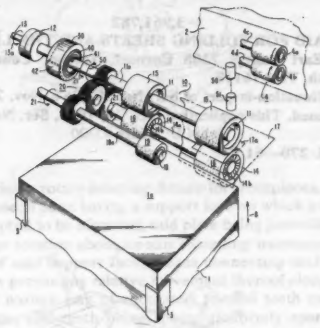
SELF CLEARING ROLLER FEED ASSEMBLY FOR DOCUMENT FEED APPARATUS

George Michael Yanker, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 23, 1975, Ser. No. 589,736

Int. Cl.² B65H *3/06, 5/06*

U.S. Cl. 271—122 **6 Claims**



1. Apparatus for feeding documents from the top of a stack of said documents, said apparatus composing:

a. a first roller assembly comprising separator and restraint rollers cooperatively communicating with one another at a nip point, and a picker roller translating documents from said stack toward said nip point,

b. respective shafts associated with said separator, restraint, and picker rollers and mounted for rotation with said rollers;

c. means adapted to be coupled with said separator roller shaft for rotatably powering said separator roller in a feed direction, thereby to advance documents entering said nip point away from said stock,

d. spring means coupled with said separator roller shaft for urging said separator roller in a direction of rotation opposite to said feed direction, the torque imparted to said separator roller increasing as said separator roller rotates in said feed direction, and

e. sensor means responsive to documents exiting said nip point for uncoupling said rotatable powering means from said separator roller shaft, thereby to enable said separator roller to rotate in said opposite direction, whereby documents entering said nip point are driven back toward said stack.

3,961,787

ALL DIRECTIONS BALANCE BOARD TO ENHANCE MOTOR DEVELOPMENT OF THE CEREBRAL PALSIED CHILD

Gary W. Studebaker, and Susan H. Studebaker, both of 9340 Buell St., Downey, Calif. 90241

Filed May 19, 1975, Ser. No. 578,520

Int. Cl.² A63B *23/00*

U.S. Cl. 272—93 **4 Claims**

1. A device comprising:

a board with a substantially flat, rectangular surface;

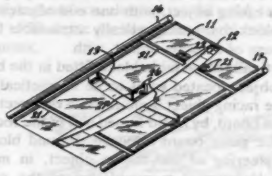
means on said board, opposite said flat surface, for allowing said board to tilt slightly from its horizontal position;

means disposed in the plane of said surface for allowing a user to grasp the device;

a removable handlebar assembly adapted to extend upward from said flat surface;

said means for tilting including a longitudinal rocker and a transverse rocker, each having a curvature equal to each other;

said handlebar assembly comprising:
a post having two spaced bars extending from one end, and



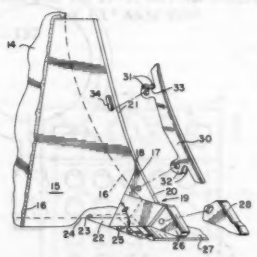
a handlebar disposed at the other end,
said board having a pair of holes disposed on opposite sides of said longitudinal rocker and each adapted to receive a respective bar; and
means for fastening said bars to said longitudinal rocker.

3,961,788

BULLDOZER BLADE WITH IMPROVED TIP AND END BIT

Eugene L. Helton, Peoria, Ill.; Nathan Gutman, Loudonville, N.Y., and Donald E. Ribbing, Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 7, 1975, Ser. No. 548,111
Int. Cl.² E02F *3/60, 3/76*
U.S. Cl. 172—777 **8 Claims**



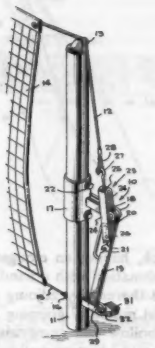
6. An earthworking tool comprising
an upright member having a pair of laterally spaced end plates secured on the ends thereof,
a pair of mounting plates each secured forwardly on and on an outboard side of a respective one of said end plates,
a pair of adapters each secured forwardly on a respective one of said mounting plates,
a pair of hardened earthworking tips each detachably mounted forwardly on a respective one of said adapters,
a forward end of each of said adapters terminating at a wedge shaped mounting projection having one of said hardened earthworking tips detachably mounted thereon and wherein forwardly disposed top edges of one of said mounting plates and a respective one of said adapters are aligned in at least substantially flush relationship relative to each other, and
an end bit mounted on said aligned top edges and detachably mounted on one of said adapters.

3,961,789

NET TIGHTENER

Martin S. Tabacheck, Box 514 Stoney Batter Road, Kingsville, Md. 21087

Filed Mar. 13, 1975, Ser. No. 557,938
Int. Cl.² A63B *61/00*
U.S. Cl. 273—29 BE **1 Claim**



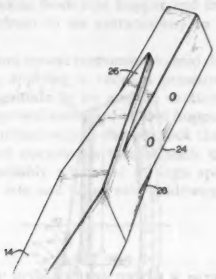
1. In a tennis net support means having at least one cable for supporting a net on a vertically disposed post having cable guide means for receiving one end portion of the cable, said cable having a hook receiving member at one end, the improvement comprising a collar encircling said post and fixed to said post by securing elements, said securing elements being at least one screw member, said screw member engaging aligned holes in said collar and said post, a pair of support members extending outwardly from said collar and substantially perpendicular to said post, an elongated lever bar swingably connected at one end to the outer ends of said support members, said lever bar having a plurality of downwardly facing and spaced apart slots located adjacent to said one end, each of said slots being inclined from one edge of said bar toward said one end, a guard member having a portion spaced from said slots and having opposite ends connected to said lever bar so that said guard member straddles said slots, a yoke having elongated generally parallel spaced apart side portions connected together at one end by a bight portion, said side portions being spaced apart a distance to receive said support members, pin means connecting the ends of said side portions remote from said bight portion, said pin means being confined within the area between said guard member and said lever bar and selectively received within said slots, hook means carried by said yoke at said bight portion and engageable with the hook receiving member of said cable, projection means secured adjacent to the lower end of said post and extending substantially perpendicular thereto and in spaced parallel relationship with said support members, means for locking the other end of said lever bar to said projection means when said yoke overlies said support members and is positioned inwardly of said one end of said lever bar, whereby said lever bar is swung upwardly so that said hook means is attached to said hook receiving member and then is swung downwardly so that said yoke overlies said support members and the tension of the cable urges said lever bar toward said post.

3,961,790

HOCKEY STICK

Frank Milligan, 251 Riverside Drive, Oakville, Ontario, Canada

Filed Feb. 5, 1975, Ser. No. 547,362
Int. Cl.² A63B 59/14
U.S. Cl. 273—67 A 6 Claims



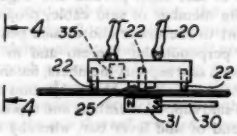
1. A hockey stick, having an elongated blade subject to undue wear in combination with a handle rigidly and readily detachably secured thereto by adjoing portions secured together in telescoped mutually gripping relation, one of said portions having a hollow end comprising a pair of opposed side walls and a top and a bottom wall to form the hollow end, said side walls each having at least one aperture therethrough in mutually aligned relation with the corresponding aperture in the opposite wall, the inner surfaces of said hollow end providing a socket of non-circular shaped cross section, said top and bottom walls each having a wedge-shaped recess therein through the thickness of the wall extending from the mouth of the hollow end a predetermined distance along the length of said one portion, the other said portion of the combination having a spigot end member with a cross section correspondingly shaped with said inner surfaces of said hollow end to provide torque resisting engagement therewith and to fit in stable engaging relation within said hollow end, a pair of oppositely extending wedge-shaped protuberances integral with said other portion protruding from opposite top and bottom surfaces of said spigot member to extend in flush fitting relation within said wedge-shaped recesses, at least one aperture extending through said spigot, positioned to fit in matching alignment with said related side wall apertures, and removeable fastening means extending through said aligned apertures to draw said side walls into gripping relation with two sides of said spigot and said spigot protuberances to provide a distributed edge contact zone acting over a predetermined axial extent of said telescoped portions.

3,961,791

RACING GAME

Pedro Etchegoyhen, Chicago, Ill., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 18, 1974, Ser. No. 524,617
Int. Cl.² A63F 9/14
U.S. Cl. 273—86 B 2 Claims



1. A racing game comprising a game board mounted on supports so as to provide space under the board that is open to the sides of the board, the upper surface of said board being marked in a pattern of racing lanes,

a plurality of wheeled, motor-driven racing objects, with each racing object fitted in its base with a magnetically attractable block, and

a plurality of rods, each of which is utilized by a player to steer his racing object, with one end of each rod tipped with a block that is magnetically attractable to the block in the base of a racing object, with

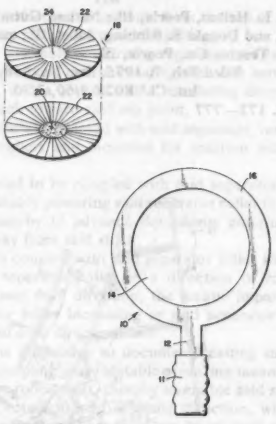
the magnetically attractable block fitted in the base of each racing object located so as to be magnetically attracted when the racing object is mounted in the erect position on the game board, by a said tipped end of the rod positioned under the game board opposite the said block so as to permit steering of the racing object, in motor-driven motion, by manual manupulation of the rod, without direct physical contact between the rod and the racing object.

3,961,792

APERTURED PADDLE AND RESILIENT PROJECTILE

John Shankel, and Marilou Shankel, both of San Francisco, Calif., assignors to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Mar. 27, 1975, Ser. No. 562,469
Int. Cl.² A63B 71/00
U.S. Cl. 273—95 R 5 Claims



1. A toy comprising a resilient member having radially extending cuts therein, said cuts defining a substantially circular solid central core in combination with a paddle member having handle means at one end thereof and a substantially centrally located aperture defined by a substantially spherical ring shaped portion at a second end thereof, said aperture being of a dimension greater than the dimension of said resilient member.

3,961,793

EDUCATIONAL AND RECREATIONAL GAME

Willie M. Zanders, 2725 Soniat St., New Orleans, La. 70115

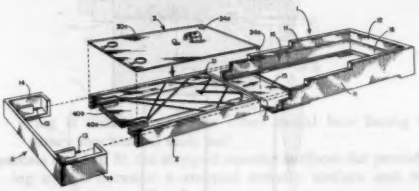
Filed Jan. 30, 1974, Ser. No. 438,019
Int. Cl.² A63D 13/00
U.S. Cl. 273—124 R 9 Claims

1. An educational and recreational game comprising:

a basic support frame;

at least one principal playing surface element of transparent material mounted on said support frame having targets mounted thereon and on which balls are rolled at said targets;

a multiple number of interchangeable complementary playing elements, each having different sets of path lines disposed thereon associated with said principal playing surface element; each set of path lines on said complementary elements being keyed to said targets and used to show the path which the ball should travel on said principal playing surface element to hit said targets and designed to illustrate certain geometrical relationships and/or figures;



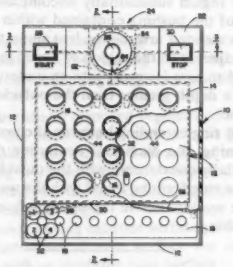
said complementary playing elements being made of transparent material, at least two of them being usable in said game at the same time, the complementary playing elements being located when in use beneath said principal playing surface element, said path lines of each of said complementary playing elements when in use being visible through said transparent material of said principal playing surface element and any of said complementary playing surface elements positioned thereabove.

3,961,794

MOTOR SKILL GAME

Adolph E. Goldfarb, 4614 Monarca Drive, Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Drive, Encino, Calif. 91316

Filed Feb. 10, 1975, Ser. No. 548,399
Int. Cl.² A63F 9/06
U.S. Cl. 273—132 **13 Claims**



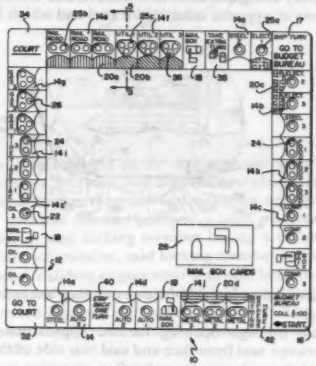
11. A motor skill game comprising:
a. a game board having a plurality of apertures therein,
b. a retaining means located beneath said game board, and being movable relative to said game board between a second position where said retaining means has a portion thereof disposed beneath said apertures in a peg retaining location and a first position where said retaining means has no portion thereof disposed beneath said apertures,
c. a plurality of pegs sized to be inserted in said apertures and retained on said retaining means when inserted in said apertures, and when said retaining means is in the second position,
d. timing means operatively associated with said retaining means to move said retaining means to said first position after a pre-established time interval,
e. and stop means operatively associated with said game board to stop said timing means.

3,961,795

ANTITRUST PROSECUTING BOARD GAME

Ralph Anspach, Berkeley, Calif., assignor to Anti-Monopoly, Inc., San Rafael, Calif.

Continuation-in-part of Ser. No. 454,062, March 25, 1974, abandoned. This application Mar. 3, 1975, Ser. No. 554,687
Int. Cl.² A63F 3/00
U.S. Cl. 273—134 AD **3 Claims**



1. Antitrust prosecuting game apparatus comprising:
a game board;
a track on said game board having a series of spaces forming a continuous path along which a game piece is movable in increments determined by indicator means;
each of certain of said track spaces representing a business entity;
a plurality of first indicia areas of different colors on said certain track spaces, each of said first indicia color appearing on at least two of said certain track spaces to group said spaces to represent unlawful business entity combinations;
a plurality of indictment chips in groups of different colors, a group for each player available for purchase by said player to serve on a business entity space on which his game piece lands;
indictment areas delineated on each of said certain track spaces for placement of indictment chips thereon, with the number of said indictment areas on all spaces of a group thereof representing a business combination being the same to identify the nature of said combination and the numbers of indictment areas differing between groups in accordance with the types of unlawful business combinations represented thereby.

3,961,796

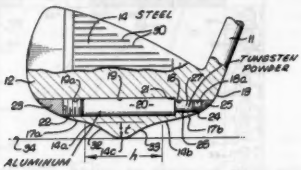
GOLFING IRON HEAD WITH DOWNWARDLY TAPERED KEEL

Stanley C. Thompson, 7851 Talbert St. Apt. 1, Playa Del Rey, Calif. 90271

Continuation-in-part of Ser. No. 368,641, June 11, 1973, Pat. No. 3,845,960. This application Sept. 27, 1974, Ser. No. 510,111
Int. Cl.² A63B 53/04
U.S. Cl. 273—167 A **8 Claims**

1. In a golf iron,
a. a metallic club head having a toe and heel, a front face to strike a golf ball, a rear side, the head having an elongated base portion extending between the toe and heel,

b. there being an elongated through opening extending within the base portion between the heel and the toe,
c. an elongated balancing weight extending within the opening, and
d. the base portion having an underside forming a downwardly convex keel extending rearwardly from the front face toward said rear side beneath said weight,
e. said front face having lower edge portions which taper downwardly and toward one another from said toe and heel, respectively, thereby to define an apex generally below the center of the ball striking zone of the front face, said apex portion being downwardly convexly rounded, said keel extending from said apex portion as a rearwardly elongated extention thereof, said underside having faces at opposite sides of the keel and which have downward concavity, said faces extending beneath said opening,
f. said through opening located approximately midway between said front face and said rear side of the head, and said through opening extending crosswise over that portion of the keel which is approximately midway between the forwardmost and rearwardmost extents of the keel, said through opening intersecting a convex outer surface of the heel which merges with one concave underside face, and also intersecting a convex outer surface of the toe which merges with the other concave underside face,
g. the keel extending under the mid-portion of the weight, and including means to retain the weight in position within the opening and relative to the keel,
h. and said balancing weight consisting of a material less dense than the material of said club head.

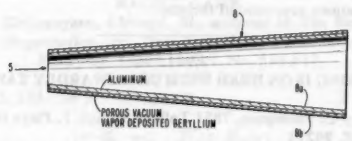


3,961,797

PHONOGRAPH PICKUP CARTRIDGE STYLUS ROD

Tsunehiro Tsukagoshi, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 14, 1974, Ser. No. 469,724
Claims priority, application Japan, May 14, 1973, 48-56502[U]
Int. Cl.² G11B 3/02
U.S. Cl. 274—37 **1 Claim**



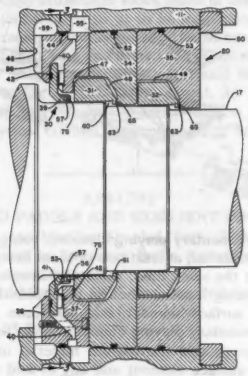
1. In a phonograph pickup cartridge stylus rod of the type wherein said rod mounts a stylus tip at the forward end and has a moving element constituting one portion of a signal generating structure at the rear end, the improvement wherein: said stylus rod comprises an aluminum pipe whose periphery carries a porous vacuum vapor deposited beryllium layer.

3,961,798

SHAFT SEAL ASSEMBLY

Leonard P. Damratowski, Monroeville, and Carl H. Geary, Greensburg, both of Pa., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 3, 1975, Ser. No. 619,328
Int. Cl.² F16J 15/50
U.S. Cl. 277—3 **9 Claims**



1. In a fluid shaft seal assembly for use in a rotary machine of the type wherein the working substance contained within the machine is prevented from escaping about the shaft by a high pressure fluid barrier maintained between the shaft and the machine frame, the improvement comprising
a pressure breakdown bushing encompassing the shaft within the fluid seal region for throttling the sealing fluid from a region of high pressure to a region of lower pressure as the fluid moves between the shaft and the bushing, said bushing being loosely housed within an opening formed in the machine frame so that the fluid in the high pressure region substantially encompasses the outer periphery of the bushing contained within the opening,
a radially extended arm dependent upon the bushing positioned adjacent to the region of lower pressure and being arranged to pass inwardly into an undercut formed in the shaft to a depth greater than the outside diameter of the shaft, and
a balancing ring extending between the arm and one wall of the opening, the diametral centerline of the ring being substantially coextensive with the outside diameter of the shaft, the ring forming a seal with the wall to prevent high pressure sealing fluid in the opening from passing around said bushing.

3,961,799

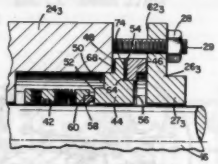
CONVERSION KIT

Harvey K. Peet, Providence, R.I., assignor to Sealol, Inc., Warwick, R.I.

Filed Sept. 29, 1975, Ser. No. 617,458
Int. Cl.² F16J 15/34
U.S. Cl. 277—9 **6 Claims**

1. A conversion kit for installing rotary mechanical shaft seals having seal rings in stuffing boxes of different sizes having packing followers, comprising:
a mating ring having
in one radial face a first stepped annular surface adapted to fit a corresponding first size of stuffing box and a first inner annular surface lapped flat to form a sealing contact with a seal ring when the mating ring is installed with said one radial face facing a rotary mechanical seal, and

in the other radial face a second stepped annular surface adapted to fit a corresponding second size of stuffing box and a second inner annular surface lapped flat to form a sealing contact with a seal ring when the mating



ring is installed with the other radial face facing a rotary mechanical seal; and

gaskets sized to fit the stepped annular surfaces for providing a seal between a stepped annular surface and its corresponding stuffing box.

3,961,800

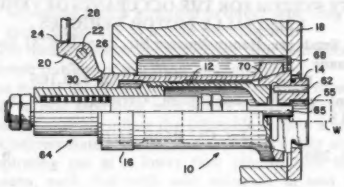
STUB COLLET

Anders Adolf Peterson, Elmira, and William J. Cummiskey, Horseheads, both of N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Oct. 10, 1974, Ser. No. 513,833

Int. Cl.² B23B *31/12*

U.S. Cl. 279—58 **12 Claims**



6. A collet assembly comprising:

a. a spring body member having a cylindrical rear portion and a plurality of spring fingers extending axially therefrom,

b. a circumferentially disposed segment of a raised annular bead near the distal end of each of said fingers

c. work gripping pads mounted on each of said fingers, said pads having a circumferentially disposed segments of a groove on the interior thereof for mounting said pads on the beads on said fingers,

d. said pads each having exterior surfaces which collectively form a frusto-conical cam surface for cooperative engagement with an actuator cam surface,

e. said pads further including an internal work gripping surface, and

f. said pads being free to rock slightly axially on said annular bead when said collet is opened or closed.

3,961,801

HEEL-HOLDING DEVICE FOR SKI BINDINGS

Heinz Korger, Munich, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany

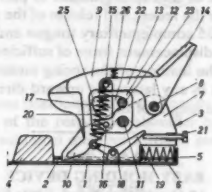
Filed Feb. 5, 1975, Ser. No. 547,336

Claims priority, application Germany, Feb. 20, 1974, 2408159

Int. Cl.² A63C *9/08*

U.S. Cl. 280—626 **4 Claims**

1. A heel-holding device for ski bindings comprising, in combination, a first transverse shaft mounted on the ski behind the boot, a sole depressor having a closing pedal mounted on said first transverse shaft for pivotal movement onto the upper sole rim of the boot and into a released position, a second transverse shaft mounted on the ski between the boot and said first transverse shaft, a locking member mounted on said second transverse shaft for pivotal movement parallel to said sole depressor between a sole depressor retaining position and a sole depressor releasing position, a first spring for urging said sole depressor through said locking member into a yieldingly clamping position onto the upper sole rim of the boot, a



handle pivotally mounted on the ski for pivotally moving said locking member into said sole depressor releasing position, a second spring weaker than said first spring for urging said sole depressor into said released position, a latch member on said sole depressor, said locking member having a recess for receiving said latch member, said locking member recess having a slide track for sliding engagement with said latch member in the boot sole rim engaging position of said sole depressor and a catch groove adjacent said slide track for locking engagement with said latch member in the released position of said sole depressor.

3,961,802

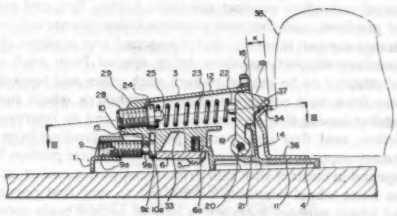
SKI BINDING

Harley E. Vannatter, 1432 Lakeshore Road, Sarnia, Ontario, Canada

Filed June 9, 1975, Ser. No. 584,884

Int. Cl.² A63C *9/08*

U.S. Cl. 280—631 **9 Claims**



1. A ski binding heel assembly for releasably securing the heel of a ski boot on a ski, comprising:

a. mounting plate means for fixedly attaching the assembly to the top surface of a ski;

b. a housing carried on said mounting plate, and a latching element pivotally mounted in said housing and including a tapering tongue movable towards and away from a latching position wherein it projects forwardly from a front part of said housing;

c. spring means within said housing operative at one end to urge said latching element to pivot in a direction to move said tongue to the latching position; and

d. adjustment means in said housing engaging an opposite end of said spring means and selectively adjustable to vary the loading in said spring means and thereby adjust the force with which the tongue is urged towards the latching position; said tongue being transversely elongated and having an upwardly and forwardly inclined

lower surface and symmetrically opposed lateral surfaces which converge in a forward direction, said tongue being adapted in the latching position to engage in a recess associated with the heel of a ski boot the recess having surfaces complementary to the lower and lateral surfaces respectively of the tongue;

such that in use said spring means is normally effective to retain the latching element in the latching position and the heel of the ski boot on the ski through interengagement of said tongue with the recess, said latching element beng pivotable against the force of said spring means to permit retraction of said tongue from the recess and release of the ski boot through interaction of said complementary tongue and recess surfaces in response to a displacement force of sufficient magnitude, as determined by the loading of the spring means, applied to the heel of the boot in any lateral or upward direction in a plane transverse to the length of the ski.

3,961,803

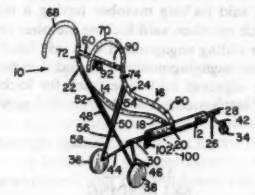
BABY HOLDING DEVICE

Henry Fleischer, 18 Notch Park Road, Little Falls, N.J. 07424

Filed Oct. 15, 1973, Ser. No. 406,620

Int. Cl.² B62B 7/08, 7/14

U.S. Cl. 280—642 **32 Claims**



1. A collapsible baby holding device comprising a collapsible frame assembly and baby holding means, said collapsible frame assembly comprising, in combination, a primary support member comprising a substantially elongated member, a pair of secondary support members having first and second end portions, said first end portions being connected to said primary support member, and the second end portions of said secondary support members being spaced from each other and adapted to be moved toward each other and toward and away from said primary support member, a wheel support member having first and second portions and an intermediate portion, said first and second portions extending from said primary support member, and said intermediate portion being disposed in contact with said primary support member, at least one front wheel rotatably connected to said first portion of said wheel support member, a pair of back wheels rotatably connected to said second portion of said wheel support member thereof, at least a pair of cross members connected to said secondary support members and handle means for maneuvering said frame.

3,961,804

STEERING ARM ATTACHMENT ADAPTER FOR STEERING STABILIZER

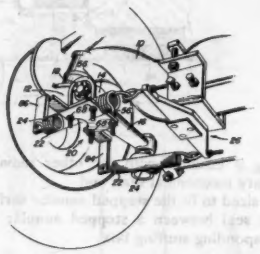
Grover Blanton, Deming, N. Mex., assignor to Steer Safe, Inc., Deming, N. Mex.

Filed Apr. 8, 1975, Ser. No. 566,116

Int. Cl.² B62D 7/06

U.S. Cl. 280—94 **6 Claims**

1. A steering stabilizer mount for the steering arm of a vehicle equipped with a hub mounted steering arm having one end portion secured through a steering knuckle, said mount including a generally planar plate body including means on one side thereof for abutting against one side of the steering knuckle sleeve portion through which said one end portion of said arm is secured, a pair of U-bolts each including a pair of generally parallel arms interconnected at one pair of corresponding ends by means of an integral curved bight portion and threaded at the other pair of ends thereof, said pair of U-bolts being disposed in substantially parallel planes for



snugly embracing the side of said one end portion of said steering arm, at the opposite ends of said sleeve portion, remote from said one side of said sleeve portion, and the threaded ends of said parallel arms being secured through said plate body.

3,961,805

SAFETY SYSTEM FOR THE OCCUPANTS OF VEHICLES, ESPECIALLY MOTOR VEHICLES

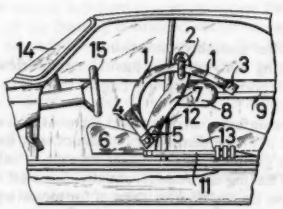
Roland Satzinger, Hammelburger Str. 21 a, D-8731 Euerdorf, Germany

Filed Mar. 13, 1975, Ser. No. 558,105

Claims priority, application Germany, Apr. 4, 1974, 2416313

Int. Cl.² B60R 21/10

U.S. Cl. 280—747 **6 Claims**

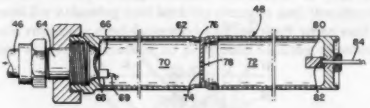


1. In a motor vehicle equipped with a front seat comprising a seating surface hingedly connected to a backrest, said motor vehicle equipped with a safety system which comprises at least one energy absorbing damper connected to said driver's seat to absorb forces which would tend to move said driver's seat forward and to stop said forward movement, a lap belt disposable over an occupant of the seat, said lap belt connected at each end thereof to said seat, a shoulder belt connected to said seat at one end thereof and to said vehicle at the other end thereof and disposable diagonally across the body of a seat occupant, said energy absorbing system comprising a first energy absorbing damper which is connected to the seating surface which longitudinally guides said front seat and a second energy absorbing damper, independent of the first energy absorbing damper, said second energy absorbing damper connected to said backrest to longitudinally guide the same, said backrest having connected thereto a rearwardly disposed restraining cushion.

3,961,806
TWO STAGE INFLATION SYSTEM

Lincoln B. Katter, Lynnwood, Wash., assignor to Rocket Research Corporation, Redmond, Wash.

Filed Feb. 4, 1972, Ser. No. 223,461
Int. Cl.² B60R 21/08
U.S. Cl. 280—732 32 Claims



1. In a vehicle having an occupant location and having structure spaced from said location, a crash restraint apparatus for protecting an occupant in said location from impact with said structure, said apparatus comprising:

a. an inflatable having a first collapsed position, a second full inflated position so that is provides a protective cushion to an occupant positioned further from said structure in said occupant location, and a third intermediate position wherein the inflatable is inflated to an intermediate volume sufficient to protectively engage an occupant closer to said structure in said occupant location,

b. an aspirating inflating apparatus comprising:

1. means defining an aspirating passageway leading into said inflatable, and

2. aspirating means arranged to direct aspirating gas into said passageway to inflate the inflatable,

c. vent means operatively associated with said inflatable to permit outflow of gas from said inflatable,

d. gas supply means to supply an initial amount of aspirating gas to said aspirating means at a higher flow rate sufficient to quickly inflate the inflatable only to a volume at its intermediate position, and to supply a later amount of aspirating gas at a lower flow rate to said aspirating means, such that with said occupant in said position further from said structure so as to permit unobstructed inflation of the inflatable, the inflatable becomes inflated to its full inflated position, and with said occupant in said position closer to said structure so as to exert a back pressure on the inflatable, the lower flow rate of aspirating gas is such relative the vent means that the inflatable is at most inflated at a moderate rate.

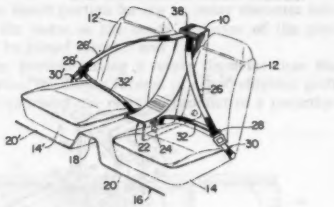
3,961,807
SAFETY HARNESS ARRANGEMENT

Takeo Maki, and Kazuhiko Yoshiyuki, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 17, 1974, Ser. No. 515,484
Claims priority, application Japan, Nov. 22, 1973, 48-134734[U]
Int. Cl.² B60R 21/10
U.S. Cl. 280—747 7 Claims

7. In a safety harness arrangement for use in a motor vehicle cabin, said motor vehicle having at least one pair of vehicle seats arranged abreast facing forward of said vehicle and with a shoulder belt associated with each of the seats;

a post member having a bottom portion thereof firmly mounted by a pair of bolts on a transmission tunnel provided on a vehicle floor between said pair of vehicle seats, and an upper portion thereof provided with a cavity and an opening, said cavity establishing communication with the outside of said post member through said opening, the cross section of said bottom portion being larger than that of said upper portion, and further, said post member having a height slightly higher than the seat back of said seat; and

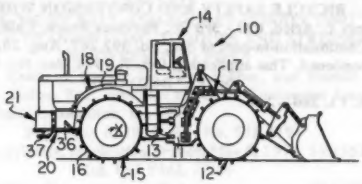


fastening means positioned with said cavity for fastening the upper end of the respective shoulder belts to the inner surface of said post member through said opening.

3,961,808
REAR FENDER ASSEMBLY FOR WHEEL LOADERS

Michael L. Dotson, Piano, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 2, 1975, Ser. No. 583,225
Int. Cl.² B62D 25/16
U.S. Cl. 280—153 R 10 Claims



1. In an earthworking vehicle comprising a frame having a pair of laterally spaced ground engaging wheels rotatably mounted on a rearward end thereof and a fender assembly mounted on said frame to cover each of said wheels, said fender assembly comprising a fender overlying a respective wheel, a support bracket secured to each of said frame and a rearward end of said fender and a reinforcing and deflection member secured to a forward end of said bracket and disposed closely adjacent to said wheel to extend transversely across the periphery thereof.

3,961,809
SAFETY STEP FOR VEHICLES

George Doyle Clugston, Rural Rte. 3, Pittsburg, Kans. 66762

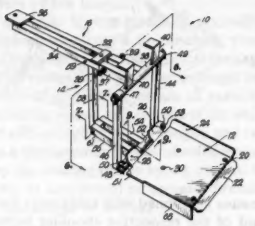
Filed Feb. 6, 1975, Ser. No. 547,382
Int. Cl.² B60W 3/02
U.S. Cl. 280—166 8 Claims

3. Safety step apparatus including:

a parallel linkage assembly having an upper linkage arm, a lower linkage arm, a pair of side linkage arms, and four pivotal connecting means having parallel axes for swingably interconnecting, respectively, said upper arm adjacent one extremity thereof with one of said side arms adjacent the upper extremity thereof, said one side arm adjacent the lower extremity thereof with said lower arm adjacent one extremity thereof, said lower arm adjacent the other extremity thereof with the other of said side arms adjacent the lower extremity thereof, and said other side arm adjacent the upper extremity thereof with said upper arm adjacent the other extremity thereof;

releasable means mounted on said assembly and operably associated with one of said connecting means for preventing relative swinging movement between the arms inter-

connected by said one connecting means when said releasable means ia actuated; and



step means supported by said assembly and operably coupled with said releasable means for actuating the latter in response to the weight of a user when placed upon said step means.

3,961,810

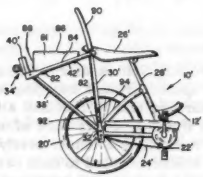
BICYCLE SAFETY AND CONVERSION WHEEL

Larry L. Arico, 630 - 3rd St., Hermosa Beach, Calif. 90254

Continuation-in-part of Ser. No. 392,267, Aug. 28, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,628

Int. Cl.² B62D *63/00*

U.S. Cl. 280—239 **3 Claims**



1. In combination with a conventional bicycle having a frame, a rotatably mounted front wheel, a rear axle secured to said frame, a rear wheel rotatably mounted on said rear axle, a seat post, a seat mounted in said seat post, and a seat support structure having two distal ends, one of said distal ends connected to said seat and the other of said distal ends connected to said frame adjacent said rear axle, said bicycle having a stable mode of operation with both conventional wheels in ground contact and a semi-stable "wheelie" mode of operation; the improvement comprising:

elongated bar structure fixedly secured to said frame adjacent said rear axle and arm structure relatively shorter than said bar structure fixedly secured to said seat adjacent said seat support structure, said arm structure and said bar structure being fixedly secured together higher than said rear axle when in said stable mode of operation, a mounting plate carried by said arm structure and bar structure adjacent their securement, an auxiliary seat mounted on said arm structure between said seat and said mounting plate to accommodate a passenger thereon, and a wheel assembly mounted on said mounting plate, said wheel assembly having a safety wheel thereon so that said bicycle can be operated in said semi-stable mode of operation with said safety wheel and said rear wheel in ground engagement.

3,961,811

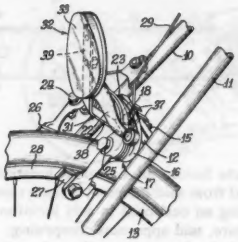
BICYCLE REFLECTOR BRACKET

Frank P. Brilando, Niles, and Rudolph G. Blaho, Franklin Park, both of Ill., assignors to Schwinn Bicycle Company, Chicago, Ill.

Filed Feb. 24, 1975, Ser. No. 552,350

Int. Cl.² B62J *5/20*

U.S. Cl. 280—289 A **5 Claims**



1. A reflector mounting bracket for use on a bicycle having a cross member, a caliper brake arm bridge and a center bolt for attaching said bridge to said cross member, said bracket comprising a slotted mounting portion adapted to be inserted between said bridge and said cross member and to receive said center bolt therethrough, a forked end portion formed integrally with said mounting portion and extending substantially normal thereto in a first direction, an intermediate portion formed integrally with said mounting portion and extending substantially normal thereto in a second direction parallel and opposite to said first direction, a second end portion integrally formed with said intermediate portion and extending therefrom, and means for mounting said reflector on said second end portion, said reflector being disposed on said second end portion such that said forked end portion is adapted to overlie said cross member and said intermediate portion extends beneath said bridge.

3,961,812

DEVICE FOR COUPLING A TRACTOR TO AN AGRICULTURAL IMPLEMENT AND THE LIKE

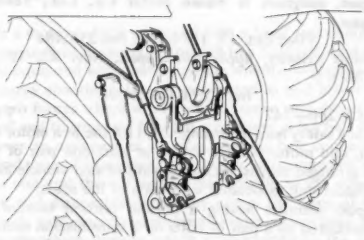
Wilhelm Von Allworden, Lohmar, Rhineland, Germany, assignor to Jean Walterscheid GmbH, Lohmar,Rhineland, Germany

Filed Sept. 5, 1975, Ser. No. 610,868

Claims priority, application Germany, Sept. 7, 1974, 2442900

Int. Cl.² B60D *1/08*

U.S. Cl. 280—478 R **11 Claims**



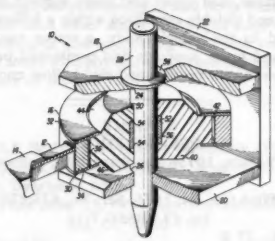
1. In a device for coupling an agricultural implement and the like having a shield plate to a tractor, a supporting bracket on said tractor, a pair of parallel catch arms pivotally mounted at their lower ends to said supporting bracket and a catch plate rigidly interconnecting said catch arms, a retaining pawl

pivotally mounted on each catch arm and having a jaw opening, a locking shaft on said supporting bracket and engagable by said pawl jaw opening, a locking element pivotally mounted on each of said catch arms and having a curved surface extending eccentrically of its pivot mounts, said curved surface being lockingly engagable with said retaining pawl, a locking lever pivotally mounted on said locking element to retain said locking element in locking engagement with said retaining pawl, and safety linkage means connected to said locking element for releasing said locking element and thereby releasing said retaining pawl from said locking shaft when said safety linkage means is actuated to pivot said locking elements.

3,961,813
TRAILER HITCH

O. Leon Thomas, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Mar. 25, 1975, Ser. No. 561,911
Int. Cl.² B60D 1/00
U.S. Cl. 280—485 **9 Claims**



1. A trailer hitch for coupling a draft vehicle to a drawn vehicle comprising a drawbar extending from one of said vehicles and having eye means mounted thereon, means extending from the other of said vehicles for receiving said eye means in coupling relation, pintle means axially extendable through said eye means and said receiving means for coupling said eye means and said receiving means, resilient means substantially completely surrounding said pintle means for maintaining said pintle means in spaced relation from said eye means and for yieldingly restraining relative radial movement between said pintle means and said eye means, said eye means including a ring-shaped housing having an annular channel formed in the inner periphery thereof, said resilient means being a molded insert of flexible material having an axial bore extending therethrough, and wherein said molded insert is mounted in the annular channel of said housing with an annular clearance which permits radial outward deformation of said insert into said channel when said pintle becomes axially inclined with respect to the axis of said eye means.

3,961,814
METHOD OF JOINING PLASTIC PIPE

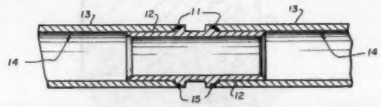
Michael F. Byrne, Long Island City, N.Y., and Douglas V. N. Powelson, Audubon, Pa., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 77,489, Oct. 2, 1970, abandoned, and a continuation-in-part of Ser. No. 868,139, Oct. 21, 1969. This application June 21, 1973, Ser. No. 372,119
The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.
Int. Cl.² F16L 13/02
U.S. Cl. 285—21 **8 Claims**

1. A polyethylene graft copolymer fitting, for use solely in joining polyethylene pipe sections to produce a pipe joint assembly wherein the fitting is less stiff than and can creep with the pipe sections which it joins, the combined fitting and pipe sections forming a pipe joint which is at least as strong as the pipe itself, said fitting comprising:

a. an annular insert portion having an outer diameter substantially the same as the inner diameter of the pipe section to be joined thereto, and

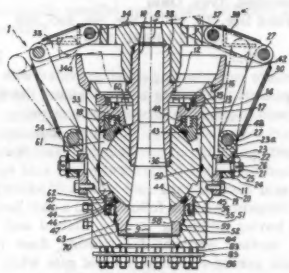
b. a shoulder portion having a larger diameter than the insert portion, the fitting formed of a polyethylene graft polymer comprising the reaction product of a polyethylene polymer or copolymer having a density of 0.940–0.950, with from about 5.0 to about 15.0% by weight of the polyethylene of a butyl rubber and from about 0.30 to about 2.5% by weight of the polyethylene of a bifunctional phenolic composition having ortho functionality and the para position of the phenol ring substituted with an inert hydrocarbon radical selected from the group consisting of alkyl, aryl, alkaryl and aralkyl radicals of up to 16 carbon atoms.



3,961,815
LEAK-TIGHT BALL-AND-SOCKET CONNECTING DEVICE TRANSMITTING TORQUES AND STRESSES BETWEEN TWO PIPES

Rene H. Coulboy, Sausset les Pins, France, and Donald F. Taylor, Dallas, Tex., assignors to Subsea Equipment Associates Limited, Hamilton, Bermuda

Filed May 6, 1975, Ser. No. 575,119
Claims priority, application France, May 6, 1974, 74.15527
Int. Cl.² F16L 27/06
U.S. Cl. 285—93 **20 Claims**

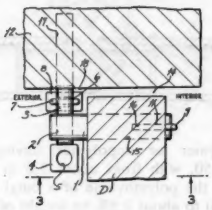


1. Leak-tight connecting device for the connection of two pipes comprising: a primary ball-and-socket joint traversed by a bore; a secondary connecting support for said ball-and-socket joint, said secondary support comprising first and second outer sealing joints and a common central sealing joint located between said first and second outer sealing joints, each said sealing joint being disposed between said ball and socket joint and said support to define with said support and said ball-and-socket joint two chambers; means for connecting said chambers to a source of an incompressible fluid under pressure; mechanical means externally connecting said ball-and-socket joint and said secondary support, said mechanical means being pivotally coupled to each said joint and said support and operable to transmit torque from one of said joint and support to the other for various relative angular dispositions of said joint and said support; and means for biasing at least one of said outer sealing joints bounding said chambers against said ball-and-socket joint.

3,961,816
AUXILIARY DOOR LOCK

Theodore V. Mueller, Florissant, Mo., assignor to Security Lock Systems, Inc., Florissant, Mo.

Filed July 3, 1975, Ser. No. 593,038
Int. Cl.² E05C 19/18
U.S. Cl. 292—148 12 Claims



1. An auxiliary lock in combination with a closure mounted within a closure frame for movement between open and closed condition, said lock comprising an elongated lock body, said closure having an opening adjacent said frame for extension therethrough of said lock body, means limiting the extension of said lock body through said closure opening, said lock body having at least one transverse bore through its extended portion, an elongated bolt dimensioned for projection through said bore, means at one end of said bolt for limiting projections of said bolt through said lock body bore, said closure frame having a socket receiving the other end of said bolt, and means detachably engageable upon said bolt between said socket-received end and said lock body.

3,961,817
DOOR LATCH FOR A PRESSURE VESSEL

Albert Eugene Schrimsher, Kansas City, Mo., assignor to Hobart Corporation, Troy, Ohio

Filed Dec. 23, 1974, Ser. No. 535,380
Int. Cl.² E05C 5/04
U.S. Cl. 292—336.3 29 Claims

1. In a pressure vessel having a wall provided with an access opening, apparatus for sealing a door against the inside surface of said wall to cover said opening comprising:

door support means supported exteriorly adjacent said wall,

door mounting means supported by said door support means and extending inwardly through said opening for pulling said door toward said wall, said door mounting means comprising a cam follower and a cam having a cam surface having adjoining steeply pitched and gradually pitched surface portions for causing door movement along said axis at a relatively repid rate when said cam follower moves against the steeply pitched portion of said cam surface and at a relatively slow mechanically advantageous rate when said cam follower moves against the gradually pitched portion of said cam surface, and

door operating means connected to said door mounting means for producing relative movement between said cam and cam follower.

3,961,818
AIR BUMPER

George Roth, Jr., 4529 N. Hamilton, Chicago, Ill. 60625

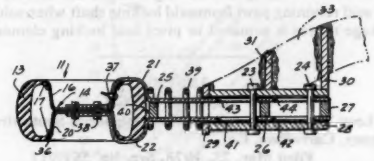
Filed Mar. 28, 1975, Ser. No. 563,126
Int. Cl.² B60R 19/10
U.S. Cl. 293—71 P 1 Claim

1. A motor vehicle bumper adapted to protrude from portions of the vehicle body to be protected, comprising:

a. a vehicle body;

b. a rubber compound encasement shaped as an elongated loop formed of a substantially linear rear portion adjacent the vehicle body, a bowed front portion, and two curved end portions connecting said rear and front portions, said encasement having upper and lower lips around an inner periphery of the loop;

c. an elongated rim supporting said encasement, said rim having upper and lower peripheral lips which seal with said upper and lower encasement lips around their entire periphery, said rim having an air valve connected thereto;

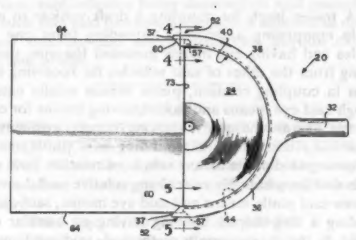


d. upper and lower support means each having a U-shaped intermediate portion for fitting around said encasement rear portion, said upper and lower support means being spaced and slidably contained within a hollow enclosure attached to the vehicle body, a spring encircling said upper and lower supports and positioned between said encasement rear portion and said hollow enclosure.

3,961,819
RECORD TOOL

Richard A. Yocum, 10730 Pendleton Pike, Indianapolis, Ind. 46236

Filed Oct. 24, 1975, Ser. No. 625,678
Int. Cl.² B65G 7/12
U.S. Cl. 294—27 R 6 Claims



1. A hand-held tool for removing a phonograph record from, and reinserting said record in, a record jacket, said tool comprising a handle, an arm member attached to said handle, said arm member having a semicircular inwardly opening continuous groove for receiving a portion of the radially outer peripheral portion of said record therein, and means for holding said record jacket in the proper orientation with respect to said groove for removing said record from, and inserting said record into, said jacket.

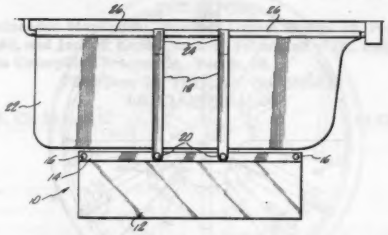
3,961,820
ADJUSTABLE SUN SHIELD

Eugene A. Spangler, 5513 Watcher St., Bell Gardens, Calif. 90201

Filed May 13, 1974, Ser. No. 469,546
Int. Cl.² B60J 3/02
U.S. Cl. 296—97 C 1 Claim

1. An adjustable sun screen adapted to be supported from an automobile sun visor, said sun screen comprising a tinted translucent sheet, a reinforcing rib disposed along the upper edge of said sheet and extending substantially the length thereof, means for securing said rib to said sheet and a pair of

supporting arms, each of said arms being of single piece construction and pivotally secured at their respective lower ends thereof to said reinforcing rib, the pivot axis of each of said arms being perpendicular to said rib and said sheet, each of said arms defining a hook member at its upper end thereof adapted to fit about the upper edge of said automobile visor



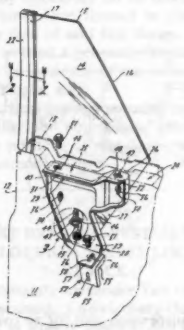
whereby said tinted sheet can be horizontally and vertically adjusted through the positioning of said hook members toward or away from each other along said upper edge of said visor and the pivoting of said supporting arms with respect to said rib and said sheet whereby the sun screen serves as an adjustable extension of the sun visor.

3,961,821

VEHICLE BODY HAVING A WINDOW OPENING

Chris Mistopoulos, Jr., Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 23, 1975, Ser. No. 589,641
Int. Cl.² B60J 1/10
U.S. Cl. 296—146 **8 Claims**



1. A vehicle body having a window opening, a window well subjacent the opening, and a vertical inner body panel forming a wall of the window well,

a window panel for the window opening,

and a bracket supporting the window in the opening,

wherein the improvement comprises:

a first series of fasteners for securing the window panel to a face of the bracket and a second series of fasteners for securing the bracket to the body panel,

both series of fasteners passing through a plurality of correlated slots for permitting, prior to final tightening of the fasteners, vertical movement of the window panel relative to the bracket and fore or aft and inboard or outboard movement of the bracket relative to the body panel,

and an adjustment screw interposed between the window panel and the bracket,

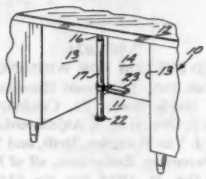
the adjustment screw being operable to vertically position the window panel in a final position in the window opening prior to the window panel being fixedly secured to the bracket by tightening the first series of fasteners.

3,961,822

FOOTREST FOR DESKS

Donald G. Daniel, 1842 Riverford Road, Tustin, Calif. 92680

Filed Oct. 17, 1975, Ser. No. 623,399
Int. Cl.² A47C 7/50
U.S. Cl. 297—423 **8 Claims**



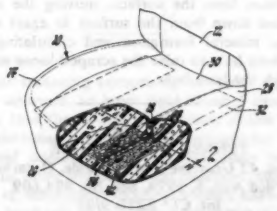
1. A footrest adapted to be removably mounted in the foot receiving area disposed beneath the top of a desk, said footrest comprising an upper tubular member and a lower tubular member, said tubular members being slidably and telescopically connected to each other at one end thereof, floor engaging means carried by the opposite end of said lower tubular member and desk top engaging means carried by the opposite end of said upper tubular member for engaging the underside of the top of the desk when said tubular members are disposed within the foot receiving area of said desk, an elongated coil spring mounted within said tubular members, said coil spring urging said floor engaging means and desk engaging means in opposite directions into engagement with said floor and desk top respectively, and a foot support member pivotally connected to said lower tubular member for movement between a horizontal use position in which it extends transversely to said lower tubular member and a storage position in which it extends vertically parallel and closely adjacent to said lower tubular member.

3,961,823

VEHICLE SEAT BOLSTER WIRE ASSEMBLY

Charles Caudill, Jr., Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 9, 1974, Ser. No. 504,024
Int. Cl.² A47C 7/18
U.S. Cl. 297—452 **3 Claims**



1. A vehicle seat comprising: a resilient foam cushion having an upwardly opening slot therein defined by side walls and a bottom wall, a plastic mesh strip having interstices therein, the plastic mesh strip traversing the slot across the bottom wall thereof and being visible at the bottom of the slot, the plastic mesh strip having portions thereof extending beyond the side walls of the slot with a plurality of the interstices having foam therein to embed the mesh strip in the foam cushion, a wire underlying the mesh strip and extending continuously along

the bottom wall of the slot generally intermediate the side walls thereof, a strip of fabric of a width greater than the diameter of the wire and underlying the wire, the strip of fabric being sewn to the strip of plastic mesh with the wire captured therebetween to attach the wire to the mesh strip so that the wire is visible at the bottom of the slot through the interstices in the plastic mesh strip, a seat cover having a portion thereof received into the slot and positioned adjacent the mesh strip, and fastener means receivable through the slot for attaching the seat cover to the wire at any selected point along the continuously visible length of the wire at the bottom of the slot.

3,961,824

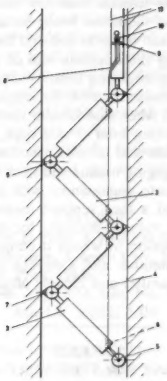
METHOD AND SYSTEM FOR WINNING MINERALS

Wouter Hugo Van Eek, 56, Groot Haesebroekseweg, Wassenaar; Henri Marie Boers, 71, Catsheuvel, The Hague; Arnold Willem J. Grupping, 3, Anjeliereniaan, Aerdenhout; Pieter Jacobus J. Van Wamelen, Delft, and Willem Christian Rehm, 172 Gravenweg, Rotterdam, all of Netherlands

Filed Oct. 21, 1974, Ser. No. 516,615

Int. Cl.² E21B *9/26*

U.S. Cl. 299—17 **12 Claims**



1. A method of mining minerals comprising forming a bore hole from the surface into the mineral formation, introducing into the bore hole from the surface in a stretched position a sectional scraper structure that can be folded into a zig-zag position in the mineral formation, pulling the scraper into a zig zagged condition from the surface, moving the zig zagged scraper up and down from the surface to exert a scraping action in the mineral formation and circulating a liquid through the bore hole to raise the scraped loose mineral upwardly through the bore hole.

3,961,825

TUNNELLING MACHINE

Richard Lovat, 42 Grovtree Ave., Rexdale, Ontario, Canada

Filed Aug. 5, 1974, Ser. No. 494,609

Int. Cl.² E21D *9/04*

U.S. Cl. 299—33 **14 Claims**

1.

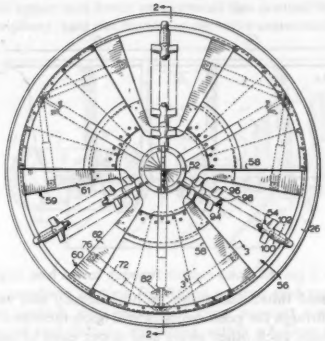
An apparatus for tunnelling through soil, comprising: a cylindrical housing;

a cutting head rotatably mounted on one end of the housing coaxial therewith and closing said one end, the cutting head having an outwardly projecting conical face with at least one aperture therein opening into the housing;

at least one toothed cutter bar mounted radially on the cutting head adjacent the face thereof and in front of the aperture;

at least one flood door mounted on the cutting head and slidable laterally on the conical face thereof to open or close the aperture or to vary the size thereof;

means mounted on the cutting head to move the flood door; and



means mounted in the housing to rotate the cutting head to advance the housing, and to convey soil rearwardly from the cutting head.

3,961,826

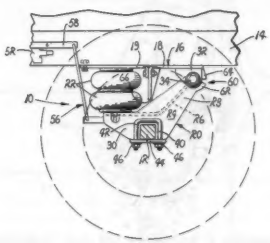
SUSPENSION UNIT

Phillip J. Sweet; Buck C. Hamlet, and David L. Sweet, all of Fresno, Calif., assignors to American Carrier Equipment, Inc., Fresno, Calif.

Filed Mar. 6, 1975, Ser. No. 555,892

Int. Cl.² B60G *11/56*

U.S. Cl. 301—125 **6 Claims**



1. An improved suspension unit for an overland vehicle of the type including a body-supporting frame and a wheel-supported axle, comprising:

A. a bracket adapted to be disposed beneath the frame of a selected vehicle and rigidly connected thereto;

B. a rigid arm of a substantially angulated configuration including a base segment and a distal segment angularly related to said base segment;

C. means including a knuckle joint for pivotally connecting said base segment of the arm to the bracket;

D. means adapted to rigidly connect the axle of the vehicle to the distal segment of the arm;

E. means adapted to resiliently support the vehicle including a pressurized air bag of a substantially constant height interposed between the bracket and the distal segment of the arm; and

F. stop means for said arm including a first pair of protrusions extended from the base segment of said arm in juxtaposition with said knuckle joint, a second pair of protrusions extended from said bracket into the path of said first pair of protrusions, for limiting pivotal motion

imparted to said arm in a downward direction, and a rigid stop depending from said bracket in a vertical plane passing through said arm for limiting pivotal motion imparted to said arm in an upward direction.

3,961,827

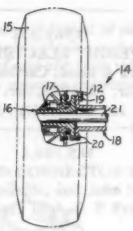
STRESS-RELIEVED WHEEL ASSEMBLY AND METHOD THEREFOR

Aleksander Mankowski, Downers Grove; Eugene M. Poplawski, and Jack H. Kraina, both of Aurora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 20, 1975, Ser. No. 588,920

Int. Cl.² B60B *35/00*

U.S. Cl. 301—132 **13 Claims**



1. A stress-relieved wheel assembly comprising

an axle housing, adapted for attachment to a frame of a vehicle, having an annular first flange disposed to extend radially outwardly on an outboard end thereof,

a wheel spindle, adapted to have a wheel rotatably mounted thereon, having an annular second flange disposed to extend radially outwardly on an inboard end thereof to position an inner face thereof in abutting relationship with an inner face of said first flange,

means forming at least a generally frustro-conically shaped concavity on at least one of the inner faces of said first and second flanges, and

fastening means drawing and securing said first and second flanges together for imposing a compressive force on radially inner portions of said flange having said concavity formed thereon.

3,961,828

TWO-CIRCUIT BRAKING SYSTEM FOR MOTOR VEHICLES EMPLOYING A WHEEL LOCK-PREVENTION DEVICE

Konrad Eckert, Stuttgart; Alexander Von Lowis, Mauren, and Klaus-Otto Riesenberg, Ludwigsburg-Osweil, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Jan. 25, 1974, Ser. No. 436,781

Claims priority, application Germany, Jan. 25, 1973, 2303505

Int. Cl.² B60T *8/00*

U.S. Cl. 303—21 AF **10 Claims**

1. In a two-circuit braking system for motor vehicles having a brake pedal, a wheel lock-prevention device that holds the brake line pressure below a locking limit pressure by means of sensors in the system and magnetic valves included in each circuit, the improvement comprising:

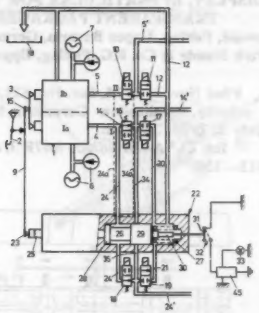
a. switching valve means connected to both circuits;

b. means mechanically connecting the brake pedal to said switching valve means; and

c. bypass means connecting at least one of the two circuits to said switching valve means, wherein

said switching valve means has a threshold value associated therewith and is switched in dependence on said threshold value such that said bypass means is placed into open communication with its respective circuit, wherein

said threshold value is a particular value of the force applied to the brake pedal, and wherein



at least some of the magnetic valves are rendered ineffective due to the switching of said switching valve means so that a braking pressure increase without lock-prevention is achieved.

3,961,829

IMPROVEMENTS IN OR RELATING TO RESILIENT MOUNTINGS

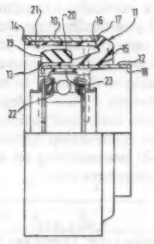
Gwynne Bowen, Leicester, and Alan Frederick Moore, Burbage, both of England, assignors to Dunlop Limited, London, England

Filed Sept. 11, 1973, Ser. No. 396,144

Claims priority, application United Kingdom, Sept. 20, 1972, 43528/74; May 5, 1973, 21521/74

Int. Cl.² F16C *35/12*

U.S. Cl. 308—28 **27 Claims**



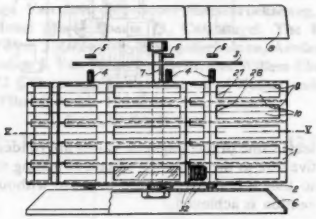
1. Reilient mounting comprising: an outer rigid member defining an aperture, an inner rigid member situated in said aperture so that the two rigid members define an annular space therebetween, a deformable first annular element located in said annular space and extending between and bonded to the inner and outer rigid members, and an annular buffer ring of deformable material located between and secured to at least one of said inner and outer rigid members wherein the improvement comprises a substantially inextensible reinforcement associated with the buffer ring which compresses an inner layer of resilient material between the reinforcement and the rigid member to which it is secured so that the buffer ring is secured by the action of compression forces in the inner layer of resilient material, the material of the buffer ring having a resilience different from that of the material of the deformable first annular element, and wherein said annular buffer ring is continuous in a circumferential direction and of a cross-sectional shape such that it resists any substan-

tial deformation by bending in a plane containing the axis of the mounting.

3,961,830
SALES DISPLAY, IN PARTICULAR FOR WATCHBAND TRANSPARENT PACKAGES

Fritz Gösswald, Peiting, Upper Bavaria, Germany, assignor to Eulit-Werk Staude & Co. KG, Peiting, Upper Bavaria, Germany

Filed Nov. 7, 1974, Ser. No. 521,641
Claims priority, application Germany, Nov. 26, 1973, 421019; July 2, 1974, 224412
Int. Cl.² A47B *88/00*; A47F *3/10*
U.S. Cl. 312—135 **15 Claims**



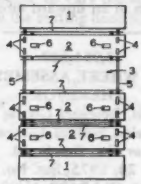
1. In a display device having several similar rectangularly shaped individual structural units, said individual structural units being placed side-by-side and one on top of the other between a base plate and a cover plate and having compartments formed between at least a pair of said individual structural units one vertically stacked on the other, said compartments having a sight opening defined by a pair of vertically stacked individual structural units and a side opening from which a package can be removed on another perpendicularly adjoining outer side, said individual structural units being connected to one another and to said base plate and said cover plate, the improvement comprising wherein each individual structural unit has a vertically extending first tongue on at least one corner and a vertically extending groove on a corner which is diagonally opposite said first tongue, both said first tongue and said groove having a rounded profile with said groove partly enclosing said tongue of an adjacent individual structural unit to thereby define a hingelike connection between said side-by-side individual structural units to facilitate a change in angular relationship between said side-by-side stack of units without necessitating an alteration in the side-by-side connection therebetween.

3,961,831
STORAGE ASSEMBLIES

Richard Grahame Dugard Showell, Bishampton, near Pershore, and Peter John Spears, Cropthorne, both of England, assignors to Bar Productions (Bromsgrove) Limited, Bromsgrove, England

Filed Mar. 18, 1975, Ser. No. 559,507
Claims priority, application United Kingdom, Mar. 23, 1974, 13266/74; Dec. 18, 1974, 54742/74
Int. Cl.² A47B *53/02*; B61J *3/04*
U.S. Cl. 312—200 **19 Claims**

1. Sensor means which is fitted to a mobile member so as to stop the latter on engagement with an object in its path comprising a trip bar; a plurality of links which are arranged at spaced points along the length of the trip bar; a pivotal connection between one end of each link and the trip bar and a pivotal connection between the other end of each link and the mobile member; the pivotal axes of all of said pivotal connections extending parallel to one another and being spaced relative to one another so that the links, mobile member and trip bar form a folding parallelogram in which the trip bar is guided to move in a plane perpendicular to said pivotal axes; and switch means which is arranged in relation to said trip bar

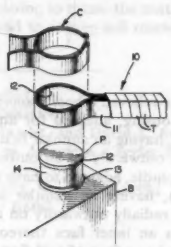


so as to be operated by movement of the latter towards said mobile member.

3,961,832
LIGHTWEIGHT ELECTRICAL CABLE

Richard E. Diggs, 12 A Road, Carthage, Mo. 64836

Filed Mar. 12, 1975, Ser. No. 557,679
Int. Cl.² H01R *11/12*
U.S. Cl. 339—29 B **9 Claims**



1. A lightweight electrical cable comprising:
a plurality of continuous flat strips of silver foil formed in layers one upon the other, with the innermost one of said flat strips being folded back on itself to form an elongated structure having the fold at one end thereof and a pair of confronting faces which contact each other for a predetermined length of said elongated structure, said confronting faces being spaced apart in non-contacting relationship with each other adjacent said one end to form a loop thereat, said loop having an inner transverse dimension sufficient to receive an electrical conductor therein with said electrical conductor oriented to extend axially of said loop with the confronting faces which form the inner surface of said loop contacting said electrical conductor to form an electrical connection between said one strip and said electrical conductor.

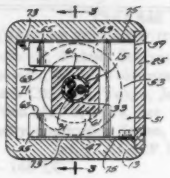
3,961,833
STRAIN RELIEF

James E. Schmitz, Racine, Wis., assignor to Andis Clipper Company, Racine, Wis.

Filed Jan. 29, 1975, Ser. No. 545,096
Int. Cl.² H01R *13/58*, *13/60*
U.S. Cl. 339—119 R **4 Claims**

1. An electrical apparatus comprising a housing having an outer surface, an inner surface forming one wall of an interior chamber, an aperture extending in said housing between said inner and outer surfaces and communicating with said chamber, and an opening extending laterally with respect to said aperture and communicating with said chamber, an electrical cord including an inner wire and an outer sheath including a strain relief portion comprising a first enlarged part engaging said housing outer surface and a second enlarged part of lesser size than said first enlarged part, extending through said aper-

ture and including therein inwardly of said housing inner surface and within said chamber, a groove extending at least partially peripherally of said second enlarged part, a retaining clip adapted for passage through said opening, received in said groove, and including a surface engageable with said housing



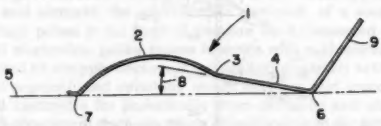
inner surface to prevent withdrawal of said cord through said aperture, a cover removably closing said opening and preventing lateral withdrawal of said clip from said groove, and means for preventing relative rotation between said cord and said housing.

3,961,834

BOW CONTACT AND CONNECTOR USING THE SAME

John T. Venaleck, Painesville, and John N. Tengler, Chardon, both of Ohio, assignors to A & P Products Incorporated, Painesville, Ohio

Filed June 19, 1974, Ser. No. 480,695
Int. Cl.[2] H01R *13/22, 13/40*
U.S. Cl. 339—176 M **20 Claims**



1. An electrical contact adapted for attachement to a substantially planar surface, comprising a deformable curved bow portion, and a substantially linear attaching portion, the contact having first and second ends at remote parts of said bow portion and said attaching portion respectively, said attaching portion defining an acute angle with a line drawn between said ends when the contact is unstressed, and while the contact is supported at said ends said attaching portion being deformable to a substantially planar abutting relation with such a surface, the contact also comprising transition portion means coupling said bow and attaching portions for maintaining said attaching portion under zero stress as a region of zero moment when said attaching portion has been so deformed to such a substantially planar abutting relation with such a surface while said first end remains so supported and while said bow portion is deformed within a predetermined range.

3,961,835

ELASTIC RETAINING CLIP

Pao C. Huang, Towson, and John C. Matra, Jr., Cockeysville, both of Md., assignors to The United States of America as representated by the Secretary of the Navy, Washington, D.C.

Filed Jan. 28, 1975, Ser. No. 544,714
Int. Cl.[2] H01R *9/12*
U.S. Cl. 339—260 **4 Claims**

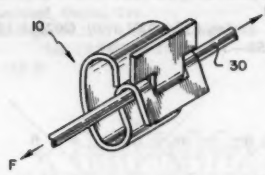
1. An elastic fastening device capable of repeatedly applying a consistent holding force comprising:

a substantially flat, planar base portion;

a pair of upstanding, arcuate leg portions having opposed, reversed, S-shaped bends formed therein, the end portion of each of the upper bends being substantially parallel to said base portion and the radius of curvature of the lower bend being larger than the radius of curvature of the upper bend;

an aperture in the upper bend of one leg portion;

a reduced-width portion in the upper bend of the other leg portion receivable in said aperture; and



lateral extensions on said reduced-width portion cooperating with said aperture to limit the displacement of said reduced-width portion within said aperture to the elastic range of the material of said fastening device,

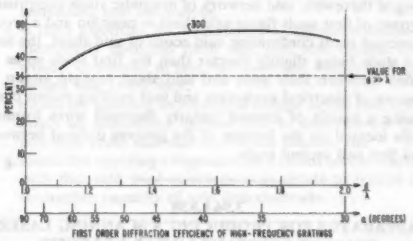
whereby said reduced-width portion is displaceable within said aperture to receive therein the means to be fastened.

3,961,836

FOCUSED-IMAGE HOLOGRAM SYSTEM PROVIDING INCREASED OPTICAL READOUT EFFICIENCY

Karl Knop, Zurich, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Sept. 20, 1974, Ser. No. 507,706
Int. Cl.[2] G03H *1/22*
U.S. Cl. 350—3.5 **2 Claims**



1. A method for increasing the optical diffraction efficiency with which a focused-image hologram consisting of a sinusoidal spatial carrier diffraction grating amplitude-modulated by a focused image of a given scene may be read out with light energy having a given intensity and including a given wavelength to reconstruct a brighter image of said given scene, said method comprising the steps of:

a. employing as said diffraction grating a sinusoidal diffraction grating lying in a given plane and exhibiting a given line spacing in which the ratio of said given line spacing to said given wavelength is greater than one and less than two, and

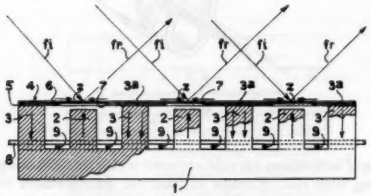
b. illuminating said focused image hologram diffraction grating with a collimated beam of said incident light energy which is inclined at a given angle larger than 30° with respect to the normal to said given plane.

3,961,837

MAGNETICALLY ACTUATED DEFLECTABLE MEMBRANE PAGE COMPOSER FOR HOLOGRAPHY

Philippe Bied-Charreton, Limours; Luigi d'Auria, Chevreuse; Francois Micheron, Gif-sur-Yvette, and Jean Pierre Huignard, Chatenay-Malabry, all of France, assignors to Thomson-CSF, Paris Cedex, France

Filed Sept. 20, 1974, Ser. No. 507,970
Claims priority, application France, Sept. 21, 1973, 73.33871
Int. Cl.² G03H 1/30; G02F 1/19
U.S. Cl. 350—3.5 10 Claims



1. In a device for converting electrical data into optical data, comprising a flexible magnetic sheet which is reflective on one of its sides, a network of magnetic circuits having a base plate of a magnetic material and being associated with a network of as many zones of said sheet for selectively deforming each one of said zones by a modification of the magnetic flux in their associated magnetic circuit and a matrix of exciting means having input means for said electrical data so as to be controlled by said electrical data for varying said magnetic flux and selectively modifying the conditions of reflection in said zones as a function of the electrical data, the improvement wherein said network of magnetic circuits comprises a network of studs of the same magnetic material as said base plate, said studs projecting from said base plate and being integral therewith, said network of magnetic studs comprising a group of first studs fixing said sheet in position and a group of second studs confronting said zones of said sheet, the second studs being slightly shorter than the first studs so as to define between their ends and said sheet a slight airgap in absence of electrical excitation and said exciting means comprising a matrix of crossed linearly disposed wires forming loops located on the bottom of the grooves defined between said first and second studs.

3,961,838

APPARATUS FOR PRODUCING A SCANNING LASER BEAM OF CONSTANT LINEAR VELOCITY

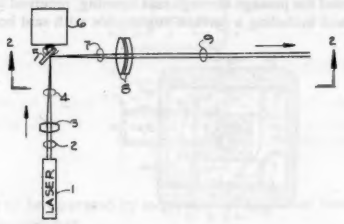
Carl A. Zanoni, Middletown, Conn., assignor to Zygo Corporation, Middlefield, Conn.

Filed Jan. 10, 1975, Ser. No. 540,079
The portion of the term of this patent subsequent to Dec. 10, 1991, has been disclaimed.
Int. Cl.² G02B 27/17
U.S. Cl. 350—7 7 Claims

1. Apparatus for producing a single scanning beam of radiant energy comprising (1) a source of radiant energy producing a single narrow collimated beam; (2) a uniformly rotating reflecting surface for reflecting said beam to produce a single angularly-scanned input beam of uniform angular velocity, which passes through (3) means for converting said single input beam into a linearly-scanning output beam of uniform linear velocity, said means comprising a lens which satisfies the relationship

$$h = k\theta$$

where h is the distance between the center of said output beam and the optical axis of said lens, k is a constant very nearly equal to the focal length of the lens and θ is the angle



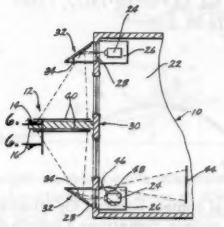
between the center of said input beam and the optical axis of said lens.

3,961,839

INDOOR-OUTDOOR IMAGE PROJECTION SYSTEM

Clarence O. Brobst, 2223 Washington, Cedar Falls, Iowa 50313

Continuation of Ser. No. 267,634, June 29, 1972, abandoned.
This application Sept. 12, 1974, Ser. No. 505,489
Int. Cl.² G03B 21/56
U.S. Cl. 350—117 5 Claims



1. An indoor-outdoor image projection system, comprising,
a building located along a public thoroughfare and having an exterior vertical wall parallel to said thoroughfare,
a vertically disposed screen at eye level from the ground, positioned outside said building between the wall and the thoroughfare and extending substantially perpendicular to said wall and said thoroughfare, and said screen having oppositely facing viewing faces viewable from said thoroughfare,
a pair of projection windows in said wall,
a pair of image projection sources in said building positioned on the inside face of said wall and on opposite sides of said screen to project images through the adjacent projection windows, and
a mirror unit including an enclosure positioned on the outside face of said wall directly adjacent each projection source to receive said image from said inside projection source and direct it onto the adjacent face of said screen, said mirror unit having a mirror extending at a 45° angle to said wall and said screen, said screen being positioned substantially equal distance between said mirror units,
a screen being provided inside said building and said image projection source being positioned on a rotatable support such that said projection source can be turned,
a mirror inside said building being positioned closely adjacent said projection window and being aligned between one of said projection sources and said screen in said building to transmit said image to said screen in said building upon said one projection source being turned only a few degrees from said outside mirror unit, and

the distance from said mirrors to said screen being greater than the distance from said projection sources to said mirrors and said screen being substantially larger than said mirror unit thereby making said screen more noticeable than said mirror units.

3,961,840

DRIVING CIRCUIT FOR LIQUID-CRYSTAL DISPLAY

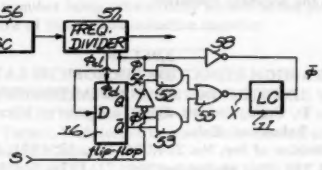
Shigeru Morokawa; Fukuo Sekiya; Ryuichi Maruka, and Yasushi Nomura, all of Tokorozawa, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 8, 1974, Ser. No. 467,993

Claims priority, application Japan, May 15, 1973, 48-53889

Int. Cl.² G02F 1/13

U.S. Cl. 350—160 LC **8 Claims**



1. In a visual display system including a liquid-crystal element constituting a segment of the display, said element being provided with a pair of electrodes for applying thereacross a voltage difference exciting a change in the visual appearance of said element, the combination therewith of a source of voltage pulses in the form of a square wave connected across said electrodes, gating means in series with said source connected to a supply of control voltage for selectively activating said segment, and switching means between said source and said electrodes for periodically short-circuiting said element with concurrent open-circuiting of said source in the activated state of said element during a recurrent interval which is short in comparison with a cycle of said square wave, said interval bridging a discontinuity in the voltage of said square wave.

3,961,841

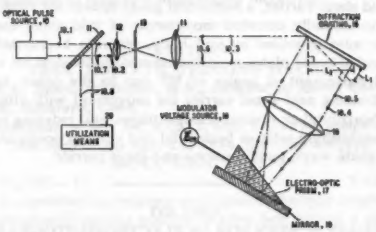
OPTICAL PULSE POSITION MODULATOR

Joseph Anthony Giordmaine, 38 Laurel Ave., Summit, N.J. 07901

Filed Sept. 23, 1970, Ser. No. 74,569

Int. Cl. G02f 1/16

U.S. Cl. 350—160 R **8 Claims**



1. A pulse position modulation system which comprises:

a. first means for producing an angular dispersion of the Fourier frequency components in an optical pulse beam;

b. second means for producing a controllable phase shift in said components, which is proportional to the difference in frequency between each of the components and the central frequency of the pulse beam;

c. third means for undoing the angular dispersion after the beam has traversed the second means, in order to form an output pulse beam whose position is shifted in accordance with the controllable phase shift.

3,961,842

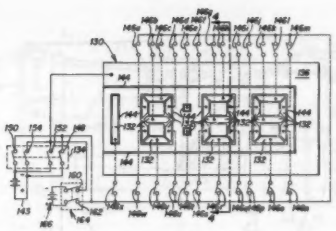
REGENERATING ELECTRODE FOR ELECTROCHROMIC DISPLAY CELL

Raymond J. Jasinski, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 20, 1974, Ser. No. 507,896

Int. Cl.² G02F 1/28

U.S. Cl. 350—160 R **15 Claims**



1. An electrochromic display cell comprising:

a. a cell structure means defining a sealed volume;

b. an electrolyte composition completely filling said volume comprising water, an anion, and an n-heptylviologen cation which when reversibly reduced combines with said anion to produce an insoluble insulating adherent film that markedly absorbs visible light;

c. a first electrode contained in said cell structure means and contacting said electrolyte forming a reversible half cell in said electrolyte;

d. a second electrode electrically insulated from said first electrode, contained in said cell structure means and contacting said electrolyte;

e. a third electrode for transferring a regeneration charge electrically insulated from said first and second electrodes, contained in said cell structure means and contacting said electrolyte;

f. means for applying an electrical voltage across said cell to effect an electrolytic current flow to alternatively write and then erase said electrochromic display; and

g. means for applying a regeneration current across said cell such that said third electrode is an anode to restore the coulombic capacity of said first electrode.

3,961,843

LIQUID CRYSTAL ELECTRO-OPTICAL DEVICE

Kenji Nakamura; Keizo Matsushita, both of Kamahura; Shigetaro Furuta, Fujisawa, and Kazuo Totani, Kamakura, all of Japan, assignors to Dai Nippon Toryo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 11, 1974, Ser. No. 522,834

Claims priority, application Japan, June 29, 1974, 49-73830; July 31, 1974, 49-87082

Int. Cl.² G02F 3/00

U.S. Cl. 350—160 LC **7 Claims**

1. A liquid crystal device of the torsion effect type comprising a cell of the structure comprising a pair of facing electrode plates and a nematic liquid crystal material having a positive dielectric anisotropy, which is inserted and supported between said two electrode plates, wherein facing electrode surfaces of said electrode plates coming into contact with the nematic liquid crystal layer are provided with a coating selected from the group consisting of poly-p-xylylene, its substituted product and mixtures thereof, and the surface of said coating is fur-

nished with a predetermined orientation and a thin band of adhesive is provided on the peripheral edge of the electrode surface of at least one of said electrode plates to seal the space between said two electrode plates.

3,961,844

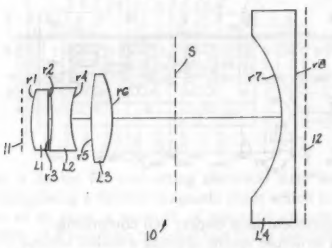
LENS

Ellis I. Betensky, Toronto, Canada, assignor to Optigon Research & Development Corporation, Santa Monica, Calif.

Continuation-in-part of Ser. No. 337,213, March 1, 1973, abandoned. This application Apr. 12, 1974, Ser. No. 460,342

Int. Cl.² G02B *3/00, 9/34*

U.S. Cl. 350—175 FS **1 Claim**



1. A lens having characteristics substantially as follows as scaled to a 23.5mm equivalent focal length:

Lens	Radius		Lens Thickness or air Space Distance	N_d	V_d
	r1	10.05mm			
L1			2.08mm	1.694	30.9
	r2	−66.137			
			.23		
	r3	−20.40			
L2			2.00	1.792	25.5
	r4	10.616			
			2.095		
	r5	27.597			
L3			2.15	1.643	59.9
	r6	−12.989			
			18.02		
	r7	−13.755			
L4			1.50	1.491	58.4
	r8	Plano			
			1.0		

Film Plane

Where N_d is the index of refraction, V_d is the Abbe number and L1 – L4 are lens elements from the object end.

3,961,845

ZOOM LENS SYSTEM

Yoshikazu Doi; Yutaka Sakai, and Kenzo Sado, all of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

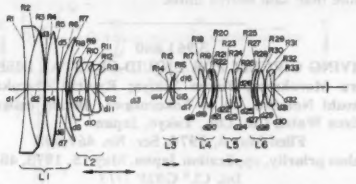
Continuation-in-part of Ser. No. 426,139, Dec. 19, 1973, abandoned. This application July 14, 1975, Ser. No. 595,885

Claims priority, application Japan, Aug. 17, 1973, 48-92113

Int. Cl.² G02B *15/00*

U.S. Cl. 350—184 **11 Claims**

1. A zoom lens system comprising a zooming lens component and a relay lens component wherein said relay lens component includes a movable lens component of no power which is moved along the optical axis thereof to compensate the fluctuation of aberration of the zoom lens system caused by



the axial movement of the zooming lens component accompanying the zooming operation.

3,961,846

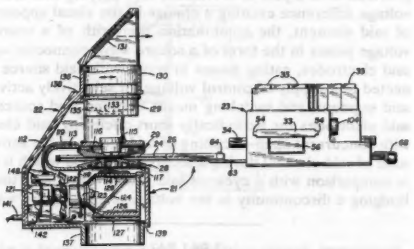
ULTRA-HIGH REDUCTION MICROFICHE LAYOUT AND POSITIONING MECHANISM THEREFOR

Wynn D. Crew, Denver, Colo., assignor to Microtech Press Inc., Lakewood, Colo.

Division of Ser. No. 214,096, Dec. 30, 1971, Pat. No. 3,871,759. This application Nov. 21, 1974, Ser. No. 526,011

Int. Cl.² G03B *23/08, 21/11*

U.S. Cl. 353—27 R **15 Claims**



1. A selector component for use when locating image pages and materials presented in ordered arrangement on a layout sheet comprising a selector body, a carrier for said sheet mounted for movement with respect to said body, a vertical guide system for constraining vertically oriented movements of said sheet carrier, a horizontal guide system for constraining horizontally oriented movements of said sheet carrier, guide ways provided by said body, separate horizontal and vertical selector plates mounted on said guide ways for reciprocal movement at angles of 90° one to the other, means constraining said sheet carrier for movement with either of said horizontal or vertical selector plates, and indexing means for establishing relative horizontal and vertical positioning of said guide ways, guide systems and sheet carrier.

3,961,847

ARCUATE SCREEN FOR AN ELECTROPHOTOGRAPHIC PRINTING MACHINE

Timothy D. Turner, and Dennis J. Smith, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

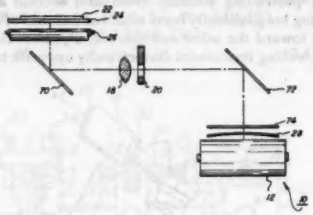
Filed Mar. 6, 1975, Ser. No. 556,027

Int. Cl.² G03G *15/22*

U.S. Cl. 355—4 **18 Claims**

1. An electrophotographic printing machine of the type having an arcuate photoconductive member, including:

an arcuate screen member closely spaced to the photoconductive member with the plane of curvature of said



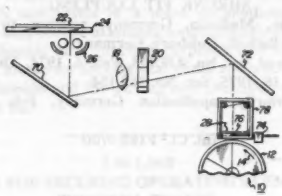
screen member being substantially normal to the plane of curvature of the photoconductive member.

3,961,848

ELECTROPHOTOGRAPHIC PRINTING MACHINE WITH HALFTONE SCREEN CLEANING

Timothy D. Turner, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 11, 1975, Ser. No. 567,149
Int. Cl.² G03G *15/22*
U.S. Cl. 355—4 **13 Claims**



1. An electrophotographic printing machine of the type having a photoconductive member, including:

a screen member mounted movably in the printing machine and positioned closely adjacent to the photoconductive member;

means for adjusting the spacing between said screen member and the photoconductive member;

a cleaning member mounted movably in the printing machine and operatively associated with said screen member; and

means for moving said cleaning member across said screen member to remove contaminants therefrom.

3,961,849

ELECTROSTATIC PRINTING MACHINE

Hugh L. Jones, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 97,572, Dec. 14, 1970, abandoned. This application Apr. 12, 1974, Ser. No. 460,316
Int. Cl.² G03G *15/22*
U.S. Cl. 355—11 **2 Claims**

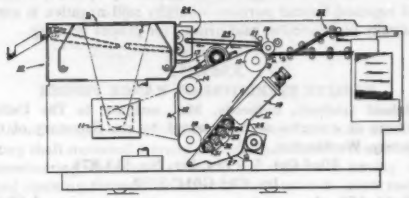
1. A reproduction printing apparatus of the type employing a continuously moving endless flexible belt having a photoconductive surface adapted to carry an electrostatic latent image of an original to be copied including,

a plurality of support rollers having their axes generally in parallel for supporting and guiding the belt in an endless path of movement, said rollers being arranged to effect at least three substantially flat runs of the belt during movement thereof,

charging means mounted in operative relationship with a first of said belt runs for uniformly charging the photoconductive belt during movement thereof, said first run lying in a plane at an incline relative to a horizontal plane,

imaging means having means for exposing the photoconductive surface during movement thereof to produce an electrostatic latent image of an original to be copied, said imaging means being effective to produce said latent image at an exposure station positioned at a second of said belt runs, said second run lying in a plane substantially parallel to the vertical,

developing means mounted below a third of said runs, said developing means comprising a series of individual cooperative developing members for progressively developing the latent image thereat, said third run lying in a plane upwardly inclined to the horizontal plane,



means for feeding support material into contact with the belt at one of said support rollers, and

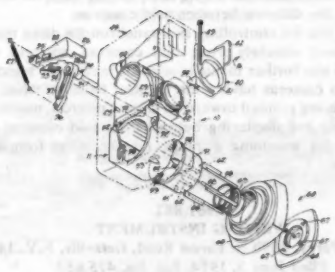
transfer means mounted adjacent said one support roller for effecting the transfer of the developed image to the support material as the same is in contact with the belt, said one support roller being positioned vertically higher than the others of said plurality of support rollers and higher than said exposure station and said second run so that the first and third runs are inclined downwardly relative to the horizontal plane running through the axis of said one support roller, said transfer means including a transfer roller disposed in operative relation with said belt opposite said one support roller, said support material passing between said belt and said transfer roller along a transfer path higher than said belt runs.

3,961,850

OPTICAL INDEX AND METHOD FOR CAMERAS AND FILM PROCESSING

James A. Millett, Fountain Valley, Calif., assignor to Lure Camera Ltd., Vancouver, Canada

Division of Ser. No. 362,274, May 21, 1973, which is a division of Ser. No. 297,324, Oct. 13, 1972, abandoned. This application Sept. 3, 1974, Ser. No. 502,555
Int. Cl.² G03B *27/32*
U.S. Cl. 355—77 **1 Claim**



1. A method of indexing and printing film strips using cameras having a lens system, a shutter controlling the opening

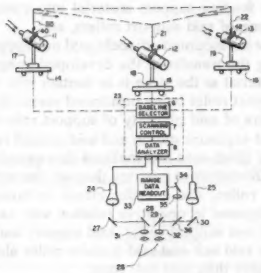
and closing of the lens system and a film transport for successively advancing portions of its film strip in non-uniform intervals across a framing window for sequential exposures and commercially available automatic printing equipment comprising the steps of exposing a limited portion of an edge of a film strip within such a camera not within the framing window at non-uniform intervals through an independent light passage simultaneously with the exposure of the portion of said film strip within said framing window, developing said film strip to obtain a negative of said exposed portions of said film strip, optically sensing on said developed film strip with automatic equipment said negative of said exposed limited portion on said edge of said developed film strip, and positioning said exposed portion of said developed film strip containing said negative which was within the framing window in a printer in relationship to the information obtained by optically sensing said exposed limited portion, whereby said negative is automatically positioned in said printer for proper printing.

3,961,851

PASSIVE STEREOVISION RANGE FINDER

Reinhold Gerharz, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 3, 1974, Ser. No. 511,876
Int. Cl.² G01C 3/00
U.S. Cl. 356—1 **1 Claim**



1. A passive stereovision rangefinder system comprising:
image converting scanning means including at least three image converting television cameras positioned at various locations constituting the vertices of a triangle whereby the baseline for scanning and ranging in any particular area is maximized by remotely selecting the two cameras having the greater baseline separation;
at least three mobile base means with one of said cameras mounted on each base;
synchronous drive means associated with each of said cameras for remotely controlling their aiming while maintaining their optical axes in parallel relationship;
ranging means associated with each mobile base for determining the distance between said cameras;
a control site for controlling said synchronous drive means positioned remotely from said cameras, wherein said control site further includes selector means for selecting the two cameras having the greatest baseline when the cameras are pointed toward an area of intcrest, means for receiving and displaying outputs from said cameras and means for providing a range measurement from said outputs.

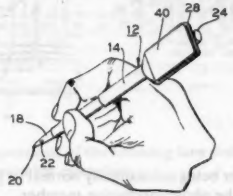
3,961,852

WRITING INSTRUMENT

David W. Parry, 2390 N. Forest Road, Getzville, N.Y. 14068

Filed June 3, 1974, Ser. No. 475,653
Int. Cl.² B43K 29/00
U.S. Cl. 401—195 **6 Claims**

1. An elongated writing instrument comprising a first section having a marking means at an end thereof and a separable second section telescopically and removably engaging said first section, a relatively rigid, relatively thin, flat plate having one side thereof joined to said second section, a portion thereof protruding laterally from said second section and extending longitudinally from adjacent one end of said second section toward the other end thereof, a pocket clip mounted on said writing instrument diametrically opposite to an area of



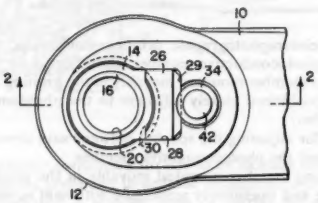
contact between said plate and said second section, said plate having a substantially uninterrupted planar surface on the side opposite said one side and means for removably mounting a supply of writing paper upon said planar surface for writing upon by said marking means whereby said instrument serves as a writing instrument, a writing base, a marking surface and a pocket shield.

3,961,853

SHRUNK FIT COUPLING

Karl Grimpe, Mulheim, Germany, assignor to DEMAG Aktiengesellschaft, Duisburg, Germany

Continuation of Ser. No. 439,978, Feb. 6, 1974. This application, Apr. 18, 1975, Ser. No. 569,184
Claims priority, application Germany, Feb. 8, 1973, 2306215.9
Int. Cl.² F16B 4/00
U.S. Cl. 403—273 **6 Claims**



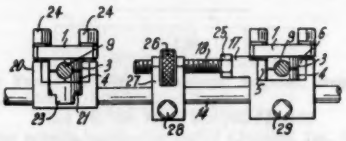
1. A shrunk fit coupling, comprising
(a) an outer sleeve means having a cylindrical bore of first predetermined diameter when heated and expanded and a second predetermined diameter when cooled and contracted;
(b) an inner cylindrical hub means having an outer diameter less than said first predetermined diameter and greater than said second diameter;
(c) plural, parallel groove means formed in each of said cylindrical bore of said sleeve means and said cylindrical hub means to provide each with a plurality of uniformly spaced, parallel land means of uniform width;
(d) said groove means being of uniform width and wider than said land means;
(e) said groove means and said land means being disposed circumferentially of said sleeve means and said hub means to establish longitudinal grooves and lands spaced radially from one another about the axes of said sleeve means and said hub means; and
(f) means limiting relative displacement of said sleeve means with respect to said hub means to the width of one of said groove means.

3,961,854

APPARATUS FOR ORIENTING AND MAINTAINING A ROD IN ANY DIRECTION

Henri Jaquet, 9, route des Jeunes, Geneva, Switzerland

Filed Sept. 10, 1975, Ser. No. 612,172
Int. Cl.² F16B 7/06
U.S. Cl. 403—59 12 Claims



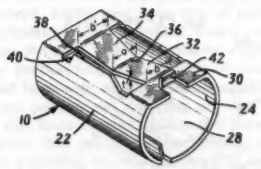
1. Apparatus for orienting and securing a rod in a spatially adjusted position, comprising a U-shaped element including opposed parallel branches, and a bottom portion connecting said branches, at least two superposed plates having mating faces with grooves therein cooperatively defining a hole, said plates being disposed between said branches a rod engaged in said hole, a flange detachably secured to said branches of the U-shaped element to hold said plates and said rod between said branches, means connecting said plates respectively to said flange and to said bottom portion for rotation about an axis parallel to said branches to enable said rod to be angularly rotated with said plates in a plane perpendicular to said branches, a support bar extending longitudinally through said U-shaped element in a direction perpendicular to said axis, and locking means for locking said plates and said rod in said U-shaped element and for locking said U-shaped element on said support bar.

3,961,855

RETAINER FOR SECURING OPERATING ELEMENTS TO CONTROL SHAFTS

Peter A. Basile, Edison, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed May 22, 1974, Ser. No. 472,441
Int. Cl.² F16D 1/06
U.S. Cl. 403—329 13 Claims



13. For use in securing an operating element to a shaft, said operating element having a recess extending interiorly therein from an open end thereof,

a retainer disposed in said operating element recess and having a first end inwardly in said recess of a second opposed end of said retainer,

said retainer defining a hollow interior for receiving said shaft and having spring means for resiliently engaging said shaft,

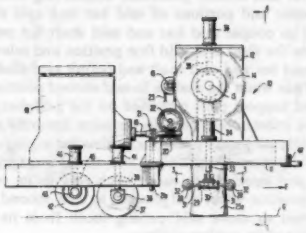
said spring means comprising first and second spring members extending respectively from said retainer first and second ends, said first spring member having a greater average section modulus than said second spring member.

3,961,856

SOIL COMPACTING MACHINE

Ernest Degenhart, Urbanizacion Bustamante No. 2, Avenue Espana, San Salvador, El Salvador

Filed Feb. 20, 1975, Ser. No. 551,376
Int. Cl.² E01C 19/34
U.S. Cl. 404—133 6 Claims



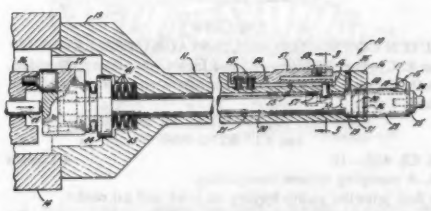
1. A soil compacting machine comprising frame means with a rotary shaft mounted thereon, a plurality of hammers serving as compacting elements, each of said hammers having a curved opening through which said shaft extends, each said hammer having a ground-engaging surface, ground-engaging means on said frame means for stabilizing the machine during its soil compacting operation, arm members mounted along said shaft for rotation therewith, one of said arm members being associated with each of said hammers and each being mounted eccentrically with respect to said hammer openings at different radial positions along said shaft, means for rotating said shaft to effect a walking movement of the machine in forward and reverse directions whereby, upon said rotation, said hammers are caused to be moved successively upwardly as said arm members each rotate between an approximately forward or rearward horizontal position and an upward vertical position, and whereby said hammers are permitted to be moved successively downwardly into contact with the soil as said arm members rotate beyond their approximately rearward or forward horizontal positions, each said hammer remaining in contact with the soil at said opposite end thereof during rotation of its respective arm member between the approximately rearward or forward and the approximately forward or rearward horizontal positions thereof, whereby said hammers effect a kneading action against the soil to thereby expel the air therefrom and effect an orientation of the soil crystals for improving upon the compaction of the soil surface.

3,961,857

BORING BAR OR THE LIKE

Robert T. Koblesky, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Filed Jan. 27, 1975, Ser. No. 544,318
Int. Cl.² B23B 29/034
U.S. Cl. 408—83 2 Claims



2. Cutting apparatus comprising a rotatable bar having an outer end, a shaft telescoped axially within said bar and supported to turn about a rotational axis which is offset radially

from the axis of the bar, selectively operable drive mechanism for rotating said shaft about its rotational axis, a cutting tooth fixed rigidly to said shaft and located outwardly beyond the outer end of said bar, said tooth being moved from an inactive position located radially inwardly of the periphery of the bar to an active cutting position located radially outwardly of the periphery of the bar when said shaft is turned in one direction within said bar, said shaft being slidable axially within said bar between first and second positions, connecting means adjacent the outer end portions of said bar and said shaft and engageable to couple said bar and said shaft for rotation in unison when the shaft is in said first position and releasable to uncouple said bar and said shaft and permit said shaft to turn within said bar when the shaft is in said second position, angularly spaced support pads mounted on the periphery of said bar to move substantially radially between inwardly retracted and outwardly projected positions, means for urging each pad to its inwardly retracted position, and means engageable with said shaft and operable to move each pad to its outwardly projected position when said shaft is in said second position and is turned to move said cutting tooth from its inactive position toward its cutting position.

3,961,858

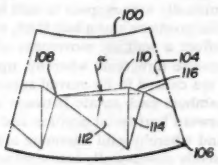
COMPOUND ANGLE CUTTING EDGE

Billy R. Smith, and Francis Moses Smith, both of Warren, Mich., assignors to B&M Die Co., Inc., Warren, Mich.

Filed June 11, 1975, Ser. No. 585,802

Int. Cl.² B23B 51/04

U.S. Cl. 408—204 **13 Claims**



1. A cutting tool having a shank terminating in a cutting portion which includes two converging surfaces forming a convergent angle of between one and thirty degrees, wherein the improvement comprises a plurality of side-by-side notches formed in one of the converging surfaces of said cutting portion, said notches defining (a) a series of generally equally spaced sharp piercing points and (b) a primary cutting edge extending away from each piercing point toward the next adjacent piercing point, each primary cutting edge extending substantially the entire distance between two adjacent piercing points and defining an angle in side elevation of the cutting tool with a line through the piercing points of between one and fifteen degrees, and each primary cutting edge defining an angle in plan view of the cutting tool with a line through two adjacent piercing points of between about zero and 15°.

3,961,859

CLUTCH CONNECTED MULTI-STAGE IMPELLER PUMP

John E. Cygnor, Middletown, and Jack G. Sundberg, Meriden, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed Apr. 17, 1975, Ser. No. 568,905

Int. Cl.² B27C 9/00

U.S. Cl. 415—18 **4 Claims**

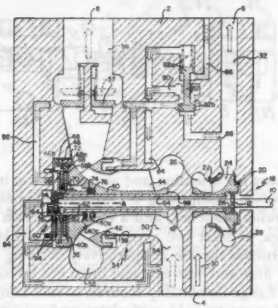
1. A pumping system comprising:

a first impeller pump having an inlet and an outlet;

a second impeller pump having an inlet and an outlet, the second impeller pump comprising: housing means, and an impeller element, having a hub, mounted for rotation within the housing means;

means to drive the first impeller pump, the drive means comprising: a splined drive shaft mounted within the housing means;

clutch means to connect the drive means to the second impeller pump to disconnect the drive means from the second impeller pump, the clutch means comprising: a pressure operated friction clutch in driving connection with the splined shaft and adapted to contact a surface on the hub during clutch engagement;



means to engage and disengage the clutch means for respectively connecting the second impeller pump to the drive means and disconnecting the second impeller pump from the drive means, the engaging and disengaging means comprising: means to apply a first fluid pressure to the clutch for engagement thereof, means to apply a second fluid pressure to the clutch which is higher than the inlet pressure for the second impeller pump to facilitate clutch disengagement and prevent clutch self-engagement in the absence of an application of the first fluid pressure, and a spring interposed between the clutch and the hub for urging the clutch to a disengaged position.

3,961,860

PROPORTIONING PUMP

Franz Ernst, Aglasterhausen, Germany, assignor to Chemie and Filter GmbH, Heidelberg, Germany

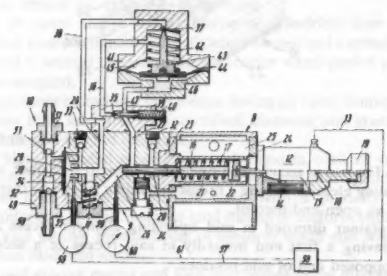
Continuation of Ser. No. 258,977, June 2, 1972, abandoned.

This application Mar. 3, 1975, Ser. No. 554,651

Claims priority, application Germany, June 15, 1971, 2129588

Int. Cl.² F04B 9/10

U.S. Cl. 417—44 **10 Claims**



1. A metering pump unit comprising a first pumping means having a movable pumping element which provides first and second oppositely expanding and contracting chambers on opposite sides thereof, inlet and outlet valve means for said first chamber to effect the flow of fluid into and out of said

first chamber upon the respective expansion and contraction thereof, second pumping means and an expansible chamber, parallel supply and return fluid paths between said expansible chamber of said second pumping means and said second chamber of said first pumping means, adjustable throttle means in said supply path for varying the quantity of a fluid delivered to said second chamber per time unit during the forward stroke of said second pumping means, and one way valve means in said return path.

3,961,861

FUEL PUMPING APPARATUS

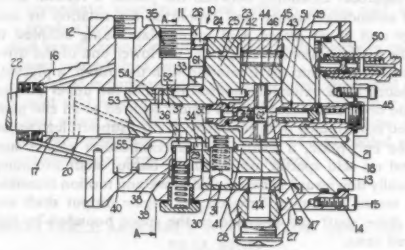
Dorian Farrar Mowbray, Burnham, England, assignor to C.A.V. Limited, Birmingham, England

Filed Dec. 30, 1974, Ser. No. 537,413

Claims priority, application United Kingdom, Jan. 4, 1974, 362/74

Int. Cl.² F04B *3/00, 29/00*

U.S. Cl. 417—265 **4 Claims**



1. A liquid fuel pumping apparatus for supplying fuel to internal combustion engines, comprising a body, said body comprising a generally cup-shaped portion having an open end and a base portion, said body also including a plug portion which is retained, within said open end of said cup-shaped portion, a cylindrical rotor mounted within said body and rotatable in synchronism with an associated engine, said rotor having a first portion located in a bore of said cup-shaped portion of said body with an enlargement axially located between said base portion and said plug portion, said enlargement having side faces bearing against said base portion and said plug portion, fuel passage means opening out onto said side faces for providing lubrication thereof, said rotor also having a second portion separate from said first portion and located in a bore in said plug portion of said body, a transversely disposed bore formed in said second rotor portion, a pair of pumping plungers housed in said bore, cam means for imparting inward movement to the plungers, a fuel feed pump for supplying fuel at a low pressure, said first portion of the rotor and said cup-shaped portion of the body accommodating said fuel feed pump and also accommodating cooperating passage means for effecting a timed supply of fuel from the feed pump to said bore to effect outward movement of the plungers, means for controlling the amount of fuel supplied to the bore, and first passage means in said second rotor portion for conveying high pressure fuel discharged from said bore during successive inward movement of the plungers to successive outlet ports in turn, said outlet ports being located in said plug portion.

3,961,862

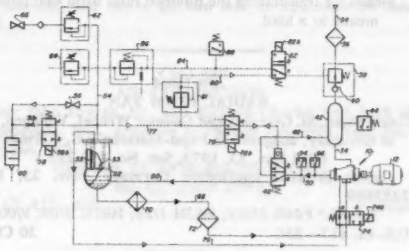
COMPRESSOR CONTROL SYSTEM

Soren E. H. Edstrom; Richard L. Ertel, and Robert A. Litteken, all of Quincy, Ill., assignors to Gardner-Denver Company, Dallas, Tex.

Filed Apr. 24, 1975, Ser. No. 571,179

Int. Cl.² F04B *49/00, 49/02*

U.S. Cl. 417—282 **13 Claims**



1. In a gas compressor apparatus:

a positive displacement rotary gas compressor including a gas inlet port and a gas discharge port;

an inlet conduit in communication with said inlet port;

a discharge conduit means in communication with said discharge port and a compressed gas receiver;

an inlet valve for closing off the flow of inlet gas into said inlet conduit;

means defining a chamber in communication with said inlet conduit between said inlet valve and said inlet port;

valve means interposed in said discharge conduit means between said discharge port and said receiver and operable to interrupt the flow of gas from said discharge port to said receiver and place said discharge port in fluid flow communication with said chamber; and,

control means for operating said inlet valve to close off the flow of inlet gas into said compressor and upon substantial evacuation of gas from said chamber operating said valve means to place said discharge port in communication with said chamber whereby the power consumed by said compressor is reduced.

3,961,863

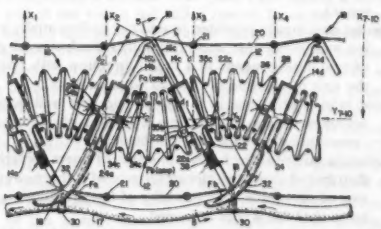
WATER ACTION POWERED PUMP

Lee Ezekiel Hooper, III, 11 Sandpiper Road, Tampa, Fla. 33609

Filed Jan. 13, 1975, Ser. No. 540,544

Int. Cl.² F04B *17/00*

U.S. Cl. 417—334 **17 Claims**



1. Apparatus for converting surface motion of a fluid body into usable energy comprising:

pumping means responsive to multiplanar activating forces for pumping a fluid;

flotation means distributed along a length of said pumping means for floating said pumping means at active strata of the fluid body;

a plurality of lever arm struts rigidly connected to said flotation means, the ends of said lever arm struts being pivotally coupled together, including means for preventing excessive expansion of said pumping means, thereby converting natural motions of the fluid body into multiplanar forces for activating said pumping means; and

means for transferring the pumped fluid from said pumping means to a load.

3,961,864

RADIAL FLOW FAN

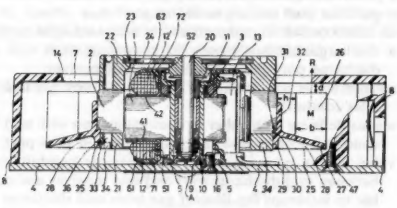
Georg Papst, St. Georgen, and Guenter Wrobel, Villingen, both of Germany, assignors to Papst-Motoren KG, Germany

Filed Nov. 23, 1973, Ser. No. 418,213

Claims priority, application Germany, Nov. 23, 1972, 2257509

Int. Cl.² F04B *35/04*; **B63H** *1/28*; **H02K** *5/00, 9/00*

U.S. Cl. 417—354 **20 Claims**



1. A radial flow fan comprising:

fan wheel means which includes a plurality of fan blades and is rotatable about a fan wheel axis,

drive motor means arranged coaxially with respect to the fan wheel means for imparting rotational movement to said fan wheel means, at least part of said drive motor means being arranged within the fan wheel means intermediate the outer periphery of the fan wheel means and the fan wheel axis, said drive motor means including a stator and a rotor,

fan casing means including circumferentially extending casing wall means which extends circumferentially around said fan wheel means at a spacing therefrom and casing end wall means at each of the respective opposite axial end faces of said circumferentially extending wall means,

outlet port means provided in said circumferentially extending wall means for accommodating discharge of gas out of said casing means in a radial direction with respect to the axis of rotation of the fan wheel means,

and inlet port means in a first of said end wall means for accommodating flow of gas into said casing means in communication with said fan blades,

wherein said rotor includes a plurality of bores therethrough distributed along the circumference of a short-circuit end ring of said rotor, said plurality of bores extending parallel to said fan wheel axis, and

wherein a continuous annular groove is provided at the axial end of said rotor facing a second of said end wall means, said annular groove being communicated with said bores and being defined on the outside by an external annular groove wall, said annular groove wall including portions bendable over portions of a collar of said fan wheel means to connect said fan wheel means to said rotor.

3,961,865

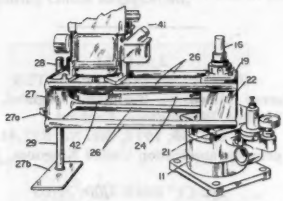
CONVERSION BRACKET FOR WELL PUMP

Vernon E. Spaulding, Rte. No. 3, Box 149, Vine Grove, Ky. 40175

Filed July 12, 1974, Ser. No. 488,031

Int. Cl.² F04B *9/14*

U.S. Cl. 417—362 **3 Claims**



1. A bracket assembly for converting a conventional well pump driven by an attached electric motor to internal combustion engine drive, said bracket assembly comprising in combination a drive shaft housing formed by horizontal upper and lower plates held in vertically spaced relation by vertical side members extending between the plates, a vertical drive shaft extending through and supported for rotation by said upper and lower plates, said lower plate being adapted to overlie a conventional well pump, the lower end of the drive shaft extending into drive relation with the pump, a plurality of spaced arms extending sidewardly from the upper portion of said drive shaft housing and rigidly secured to an end plate spaced horizontally from said drive shaft, a support leg carried by the end plate, a small internal combustion engine supported on said spaced arms with its output shaft extending vertically downward between said arms, and motion transmission means extending between the engine output shaft and said drive shaft and disposed in the space bounded by said spaced arms.

3,961,866

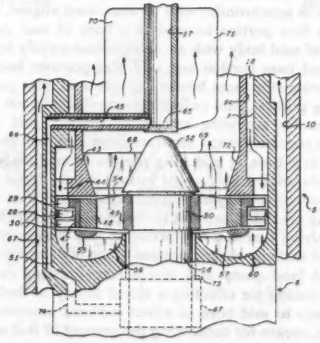
GEOTHERMAL ENERGY SYSTEM HEAT EXCHANGER AND CONTROL APPARATUS

Kenneth E. Nichols, Arvada, Colo., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 14, 1974, Ser. No. 497,441

Int. Cl.² F04B *17/00, 35/00*; **F03G** *7/02, 7/04*

U.S. Cl. 417—379 **4 Claims**



1. In geothermal deep well pump apparatus of the kind including deep well pump means for pumping a geothermal fluid always in liquid state for flow in cooperative energy-exchanging relation with respect to a second fluid:

injection conduit means for conveying said second fluid in liquid state from a station adjacent the earth's surface at a pressure above the pressure of said geothermal fluid,

first discrete heat exchanger means responsive to said geothermal fluid for converting a first portion of said second fluid into its vapor,

motive means coupled to said deep well pump means utilizing energy of said vapor for pumping said geothermal fluid, thereby cooling said vapor,

second discrete heat exchanger means responsive to said cooled vapor for cooling a second portion of said second fluid,

said motive means utilizing said cooled second portion of said second fluid for lubricating bearings thereof while in liquid state,

vapor conduit means disposed generally concentrically about said injection conduit means for transfer of said cooled vapor to said station adjacent the earth's surface,

geothermal fluid conduit means disposed generally concentrically about said vapor conduit means for transfer of said geothermal fluid to said station adjacent the earth's surface, and

vapor expansion diffuser means disposed within said cooled vapor in said vapor conduit means between said motive means and said second discrete heat exchanger means,

said motive means, said vapor expansion means, and said second discrete heat exchanger means being disposed in immediate successive axial relation along said vapor conduit means,

said vapor expansion diffuser means cooperating in cooling said second fluid, and

said vapor expansion diffuser means being supported adjacent said motive means by radial vanes extending from said vapor conduit means inner surface, said vanes additionally providing reduced rotation of said cooled vapor at said vapor expansion diffuser means.

3,961,867
ROTATABLE ASSEMBLY WITH ROTOR ABRADED BY SEAL RING

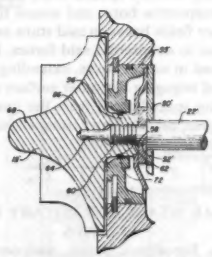
William E. Woollenweber, Columbus, Ind., assignor to Holset Engineering Company Limited, Turnbridge, England

Filed Mar. 27, 1974, Ser. No. 455,668

Claims priority, application United Kingdom, Apr. 6, 1973, 16521/73

Int. Cl.[2] F03B *11/00*; F03D *11/00*; F16J *15/34*

U.S. Cl. 417—407 **4 Claims**



1. A high speed rotatable assembly comprising a housing; a rotor rotatably mounted within said housing, said rotor having an axially extending sleeve portion provided with an axial bore and an external groove; a shaft rotatably mounted within said housing and having one end thereof disposed within said sleeve bore; a backing plate attached to the housing interior surface, said plate being provided with a stepped bore through which said rotor sleeve portion extends, said stepped bore having a large diameter portion and a small diameter portion, the latter forming a step located intermediate the sleeve external groove and the open end of the sleeve bore; seal means disposed within said sleeve external groove and encompassing said sleeve exterior and frictionally engaging the large diameter portion of said plate stepped bore, said seal means having greater wear-resistant characteristics than that of the sleeve portion defining said external groove accommodating said seal means, said seal means having one end face thereof subjected to pneumatic forces urging said seal means towards said step when said rotor is rotating; and thrust bearing means disposed intermediate said sleeve portion and an abutment on said shaft.

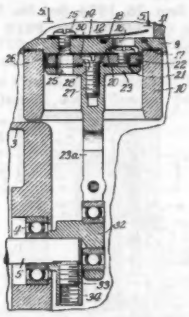
3,961,868
AIR COMPRESSOR

Arthur John Droege, Sr., and Richard Charles Bell, both of Sheboygan, Wis., assignors to Thomas Industries, Inc., Sheboygan, Wis.

Filed Feb. 21, 1974, Ser. No. 444,472

Int. Cl.[2] F04B *39/10*

U.S. Cl. 417—550 **1 Claim**



1. In a compressor the combination of a cylinder (10) having a cylindrical interior working wall and a cylinder head (9), a discharge check valve (14) having a passageway (16) through said cylinder head, said valve comprising a thin parallel sided flat strip of spring metal attached at one end to the top side of said cylinder head, a piston (22,23) in said cylinder, said piston having an inlet passageway (25) therethrough and an inlet check valve (30) for said passageway permitting gaseous fluid to flow through the piston inlet passageway into the cylinder from below the piston, a crank shaft (5) having a stationary bearing (4) rigid with the cylinder and having a crank with a crank pin (32), a piston rod (23*a*) rigidly connected at its outer end with the piston and having a free end with a crank bearing journaled on said crank pin (32), said piston comprising a circular base plate (23) rigidly attached to the end of the piston rod (23*a*) remote from the aforesaid crank bearing and an upper circular flat clamping plate (22), a flexible nonmetallic cupped sealing disk (26) of a free diameter greater than the diameter of the bore of the cylinder and having a central flat portion clamped between said circular base plate (23) and said clamping plate (22) and comprising an integral peripheral flange engaging the walls of the cylinder in sliding relation, said cupped nonmetallic flanged disk (26) comprising a thin circular body of Teflon of substantially uniform thickness, the flange of said disk fitting against the walls of the cylinder on both suction stroke and discharge stroke of the piston, said inlet check valve (30) having a passageway connecting the space below the piston with the inside of the cylinder, and the discharge check valve (14) providing a connection from inside the cylinder through the cylinder head, said check valve comprising a thin flat flexible strip of spring metal attached at one end to the cylinder head (9), the flange of said Teflon disk maintaining the metal parts of the piston out of metal-to-metal contact with the cylinder

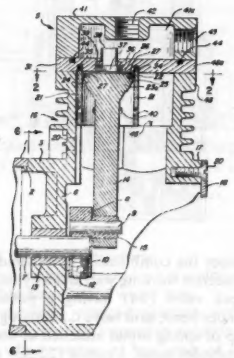
walls during reciprocation of said piston, said circular Clamping plate (22) having a central axial opening countersunk at its upper end, the disk (26) having a central opening in register with the opening of the aforesaid clamping plate 22, the base plate (23) on the upper end of the connecting rod having a threaded screw socket, there being registering central openings through the clamping plate and the disk, a central conical headed clamping screw threaded into said threaded socket far enough to bring its head below the level of the upper surface of the clamping plate (22) for clamping the plate (22), the flexible disk (26) and the end of the connecting rod together, and the discharge valve comprising a thin flat parallel-sided spring held by a clamping screw threaded into the clamping plate (22) over the countersunk screw (27) and over the inlet passageway (25).

3,961,869

AIR COMPRESSOR

Arthur John Droege, Sr., Sheboygan, Wis., and Richard Charles Bell, Pittsburgh, Pa., assignors to Thomas Industries, Inc., Sheboygan, Wis.

Filed Sept. 26, 1974, Ser. No. 509,691
Int. Cl.² F04B *21/04*; F01B *7/00*
U.S. Cl. 417—555 R **2 Claims**



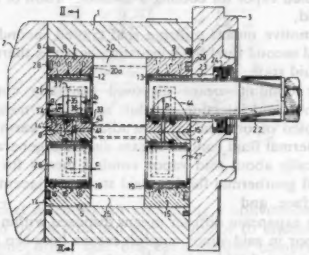
1. In a gas compressor, a hollow main frame comprising a generally cylindrical crank case adapted to be disposed with its longitudinal axis in horizontal position and having a substantially vertical end wall, a horizontal crank shaft extending through and journaled in said end wall, said frame comprising a tubular neck portion disposed substantially at right angles to the axis of the crank case, said neck portion being joined to and opening into said crank case, a substantially horizontally disposed cylinder supporting plate mounted upon and closing the upper end of said tubular neck portion, an inverted cup-shaped delivery chamber having its rim superposed upon the margins of the upper side of the cylinder-supporting plate, a compressor cylinder with its axis substantially at right angles to the axis of the crank shaft mounted to and sealed to the lower side of said plate, there being a check valve passageway through said plate from the inside of the cylinder to said delivery chamber, a wobble piston and a piston rod fixed to said piston cooperating with said cylinder, a crank on said crank shaft coupled to said piston rod, and means for admitting air to the cylinder upon the outward stroke of the piston, said neck portion of the main frame having an internal horizontal shoulder for engagement with the lower end of said cylinder, the bore of the hollow neck portion being oblong in cross section to permit displacement of the cylinder laterally along said crank shaft to disconnect the lower end of the piston rod from the crank pin for removal of the cylinder and contained piston with piston rod from the hollow main housing.

3,961,870

GEAR PUMP OR MOTOR WITH RADIAL BALANCING

Jan Vlemmings, Hochdorf, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Oct. 15, 1974, Ser. No. 515,042
Claims priority, application Germany, Oct. 25, 1973, 2353445
Int. Cl.² F01C *21/02*; F03C *3/00*; F01C *19/08*; F04C *15/00*
U.S. Cl. 418—73 **12 Claims**



1. In a hydraulic machine, a combination comprising a housing having an inlet opening for admission of hydraulic fluid and an outlet opening for evacuation of fluid, the pressure of fluid in one of said openings being higher than the pressure of fluid in the other of said openings; a pair of mating gears rotatable in said housing and having two end faces and coaxial stubs extending beyond said end faces; bearing members mounted in said housing, one for each of said stubs and each having a bore for the respective stub, each of said bores having a smaller diameter portion remote from the respective gear and a larger diameter portion nearer to the respective gear and joined at a shoulder to the smaller diameter portion, said bearing members having internal surfaces bounding said bores thereof and said stubs transmitting forces radially of said bearing members when said machine is in operation, each of said internal surfaces having an arcuate groove extending from said shoulder to the nearest end face of the respective gear and each of said internal surfaces having a portion bounding the respective groove and said bearing members having recesses in said portion of said internal surfaces; cylindrical sleeves surrounding said stubs, each of said sleeves extending with minimum clearance into the smaller diameter portion and being radially spaced from the larger diameter portion of the respective bore; and means for producing hydrostatic pressure fields between said stubs and the respective bearing members to counteract said forces, including sealing elements disposed in said grooves, extending into the respective recesses and engaging the outer surface of the respective sleeves and being spaced apart from the nearest end face of the respective gear, said sealing elements defining fluid-filled plenum chambers.

3,961,871

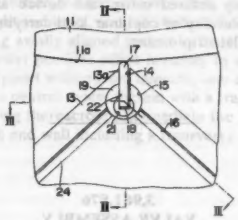
CORNER SEAL MEANS FOR ROTARY PISTON TYPE ENGINES

Noriyuki Kurio, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Japan

Filed Jan. 16, 1975, Ser. No. 541,572
Claims priority, application Japan, Jan. 23, 1974, 49-10646[U]; Nov. 8, 1974, 49-135850[U]
Int. Cl.² F01C *19/10*
U.S. Cl. 418—121 **4 Claims**

1. In a rotary piston type engine comprising a casing which includes a rotor housing with a trochoidal inner peripheral wall and a pair of side housings sealingly secured to the opposite sides of the rotor housing, and a polygonal rotary piston disposed in the casing for rotation relative thereto and having a plurality of apex portions, the rotary piston being provided

with apex seals disposed at apex portions thereof, side seals on each end surface of the piston substantially along the periphery thereof and corner seals on each end surface of the piston at the apex portions thereof, characterized by the fact that said corner seal comprises a substantially cylindrical body, an



axial bore of circular cross-section radially offset from the axis of the body with the center of said axial bore located below the axis of the body, and a substantially radially extending slot provided in the body at the side opposite to the direction of offset of the bore so as to define a substantially C-shaped cross-section of varying wall thickness.

3,961,872
GEAR MACHINE WITH FLUID-BIASED END FACE SEALING ELEMENTS

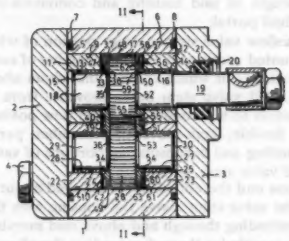
Karl-Heinz Müller, Gerlingen; Wolfgang Talmon, Otisheim, and Wilhelm Dworak, Stuttgart, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Dec. 17, 1974, Ser. No. 533,674

Claims priority, application Germany, Jan. 24, 1974, 2403319

Int. Cl.² F01C *19/08*; F03C *3/00*; F04C *15/00*

U.S. Cl. 418—132 **19 Claims**



1. In a hydraulic gear machine, particularly a gear pump or motor, a combination comprising a housing having an inner surface bounding a cavity; a pair of gears in said cavity and having meshing teeth; means for mounting said gears for rotation about spaced axes and including bearing elements; sealing elements interposed between said bearing elements and said gears, said bearing elements being juxtaposed with said housing and said sealing elements along respective interfaces and defining with said housing and said sealing elements respective recesses into which said interfaces open; and seal member accommodated in said recesses and delimiting therein confined spaces for a pressurized fluid, each of said seal members having one sealing face which engages said inner surface of said housing and another sealing face which engages a circumferential surface radially inwardly bounding said recess and being operative for interrupting communication between said confined spaces and said interfaces to thereby prevent the pressurized fluid from reaching and leaking through said interfaces.

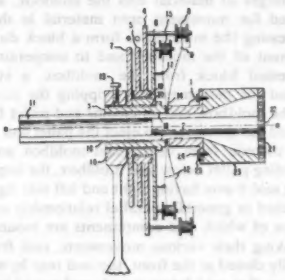
3,961,873
APPARATUS FOR REINFORCING TUBING

Martin Luther Brown, Elkton, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 31, 1975, Ser. No. 546,180

Int. Cl.² B29F *3/00*

U.S. Cl. 425—114 **4 Claims**



1. An apparatus for reinforcing elastomeric or plastic tubing which comprises:

a. a cylindrical mandrel,

b. a means connected to said mandrel for attaching the cylindrical mandrel to an extruder,

c. a first ring die surrounding and concentric with the cylindrical mandrel,

d. a means connected to said first ring die for attaching the first ring die to the extruder,

e. a second ring die surrounding and concentric with the cylindrical mandrel and longitudinally spaced apart from the first ring die to form an annular opening,

f. a means connected to said second ring die for supporting the second ring die, and

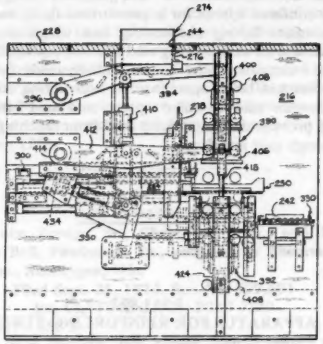
g. a pair of spool carriers, the first of which is rotatably mounted on bearings which are located on the outer surface of the second ring die, and the second of which is rotatably mounted on bearings which are located on the outer surface of the base of the first spool carrier so that the spool carriers can rotate in opposite directions around the axis of the cylindrical mandrel which runs perpendicular to all radii of the cylindrical mandrel, said spool carriers for holding spools of reinforcing filament.

3,961,874

SOUND INSULATED BLOCK MOLDING MACHINE

Milo G. Balhorn, Waterloo, Iowa, assignor to Old Fort International, Inc., Adrian, Mich.

Filed Jan. 27, 1975, Ser. No. 544,137
Int. Cl.[2] B28B 1/08, 3/00
U.S. Cl. 425—211 26 Claims



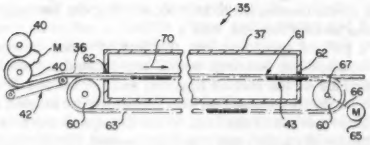
1. An improved block molding machine having a frame and a plurality of movable compounds for molding blocks, said components including a moldbox mountd for vibrational movement, a feed drawer mounted for movement between a retracted position and an advanced position to deposit successive charges of material into the moldbox, a pressure head mounted for movement onto material in the moldbox for compressing the material to form a block during vibrational movement of the moldbox and to cooperate in stripping a compressed block from the moldbox, a strip mechanism mounted for movement for stripping the compressed block from the moldbox, and an ejector and pallet feed mechanism mounted for movement to eject the pallet and the compressed block thereon from below said moldbox and to deposit a succeeding pallet below said moldbox, the improvement comprising said frame having right and left side rigid frame panels connected in generally parallel relationship and on the inner surfaces of which said components are mounted for support for making their various movements, said frame being substantially closed at the front, top and rear by sound insulation panels so that said frame panels and sound insulation panels cooperating to define a sound insulation enclosure for said movable components and also to provide a shield to protect operators from exposure to the movable components during operation of the block molding machine.

3,961,875

APPARATUS FOR MAKING CARPET UNDERLAY

George R. Sprague, Dyersburg, Tenn., assignor to Colonial Rubber Works, Inc., Dyersburg, Tenn.

Division of Ser. No. 380,429, July 18, 1973. This application June 26, 1975, Ser. No. 590,662
Int. Cl.[2] B29H 3/00
U.S. Cl. 425—224 6 Claims



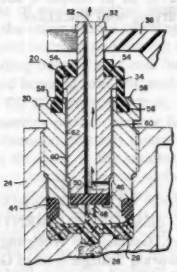
1. An apparatus for making carpet underlay comprising, a device for providing a controlled environment comprising a heating means for curing a sheet of elastomeric material which is adapted to define said carpet underlay, means for supporting said sheet in said device, said supporting means comprising a wire-like mesh material having a plurality of undulating members with each adjacent pair of undulating members being held together by a common tie member, and elongated flat strip means supported by each undulating member, said flat strip means being adapted to support portions of said sheet once it is exposed to the environment of said device so that carpet underlay defined using said device and supporting means has a plurality of coplanar load-carrying portions defined by said flat strip means.

3,961,876

VALVE ASSEMBLY

Stephen P. Chernock, Flax Mill Lane, Milford, Conn. 06460

Filed June 6, 1974, Ser. No. 477,037
Int. Cl.[2] F23D 13/04
U.S. Cl. 431—344 4 Claims



1. A leak-free valve assembly comprising:

a. a housing incorporating

a. a combustible fluid portal positioned for receiving and passing said combustible fluid therethrough,

b. an internal chamber extending substantially the entire length of said housing and communicating with said fluid portal;

b. a hollow valve stem a major portion of which is slidably mounted within said internal chamber of said housing, the remainder of which extends therefrom above said housing, said valve stem being movable from a first closed position to a second open, fluid flow position;

c. a flexible, leak-preventing member peripherally surrounding and encapsulating portions of said housing and said valve stem, with

a. one end thereof sealingly engaged about a shoulder of the valve stem above the housing with the valve stem extending through and above said member, and

b. the remainder thereof extending therefrom peripherally surrounding the valve stem, with the other end pressed between opposed upper portions of said housing and biasing the valve stem into a closed position,

whereby leakage between the outer peripheral surface of the valve stem and the inner chamber of the housing to the atmosphere is completely eliminated by said leak-preventing member completely sealing any leakage zone.

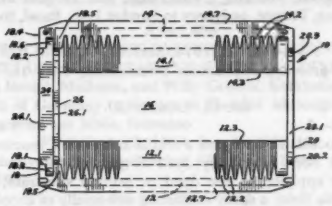
3,961,877

REINFORCED WAFER BASKET

Douglas M. Johnson, Carver, Minn., assignor to Fluoroware, Inc., Chaska, Minn.

Filed Sept. 11, 1974, Ser. No. 504,904
Int. Cl.² F27D 5/00
U.S. Cl. 432—253 13 Claims

1. A reinforced, distortion-resistant wafer basket having an open top for insertion and removal of wafers, an open bottom, opposed, upright end walls, and side walls with inner, opposed ribs for spacing axially aligned wafers in the basket, the side walls having lower portions offset inwardly to stiffen the side walls and to support wafers from beneath, one end wall of the basket having a central recess therein with a transverse indexing bar extending thereacross intermediate the heighth of the basket, the one end wall including a transverse flange providing stiffening gussets extending between the side walls and the indexing bar to reinforce the recessed end wall against distortion and to co-act with the offset side walls to stiffen the basket and restrain twisting or bowing of the side walls.



3,961,878

ELECTROSTATIC SPRAYING OF FIXING AGENTS

Miro Capponi, Muttenz, Switzerland, and Jacques Moreau, Mulhouse, France, assignors to Sandoz Ltd., Basel, Switzerland

Filed Feb. 15, 1974, Ser. No. 443,076

Claims priority, application Switzerland, Feb. 16, 1973, 2324/73

Int. Cl.² D06P *5/20*

U.S. Cl. 8—2 9 Claims

1. A process for fixing on a textile substrate a reactive dye which has been previously dyed or printed thereon which comprises applying to the dyed or printed substrate, in an electrostatic field, a spray consisting essentially of droplets of an aqueous solution of a fixing agent selected from the group consisting of alkali metal hydroxides, alkali metal carbonates, alkali metal bicarbonates and ammonium carbonate, said solution being of a concentration of 0.5 to 20%.

3,961,879

DYE COMPOSITION FOR KERATINIC FIBERS CONTAINING A PHENOL COUPLER

Andree Bugaut, Boulogne-sur-Seine, and Monique Laudon, Gagny, both of France, assignors to L'Oreal, Paris, France

Filed June 24, 1974, Ser. No. 482,559

Claims priority, application Luxemburg, June 22, 1973, 67862

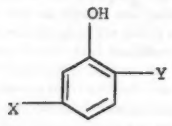
Int. Cl.² A61K *7/13*

U.S. Cl. 8—10.2 15 Claims

1. A dye composition for keratinic fibers comprising an aqueous or hydroalcoholic solution of

a. at least one oxidation base comprising a paraphenylenediamine, present in the form of a free base, or in the form of an acid addition salt thereof and

b. at least one coupler of the formula:



wherein Y represents a member selected from the group consisting of $-NHCOCH_3$ and $-NHCONH_2$; and X represents a member selected from the group consisting of fluorine, chlorine, and bromine, or the acid addition salt of said coupler, said coupler being present in an amount of 0.05 to 4% based on the total weight of the composition and the molar ratio of said oxidation base to said coupler being between 5:1 and 1:2.

3,961,880

CONTINUOUS PROCESS FOR OPTICAL BRIGHTENING AND PRINTING OF ORGANIC TEXTILE FIBER MATERIAL

Gerhard Reinert, Allschwil; Andres Schaub, Biel-Benken, and Paul Dussy, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 18, 1974, Ser. No. 480,340

Claims priority, application Switzerland, June 29, 1973, 9505/73

Int. Cl.² D06M *13/00*; D06P *5/22*

U.S. Cl. 8—17 19 Claims

1. Continuous process for the optical brightening and printing of organic textile fibre material, wherein the material is dry cleaned and at least one optical brightener applied from an organic liquor, the said material being then intermediately dried, printed, and subsequently finished by a heat treatment to simultaneously develop the optical brightener and fix the dyestuff.

3,961,881

COLORATION PROCESS

Harry Hall Sumner, and Gerald Williams, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed July 22, 1974, Ser. No. 490,493

Claims priority, application United Kingdom, Aug. 21, 1973, 39429/73

Int. Cl.² D06P *3/06*, *3/26*

U.S. Cl. 8—17 5 Claims

1. Process for coloring synthetic polyamide textile materials to produce level coloration having excellent wet fastness properties which consists essentially of applying to the said textile materials by a dyeing, padding or printing process an aqueous dispersion of pH less than 7 containing a disperse dyestuff of the azo, anthraquinone, nitro, styryl or quinophthalone series containing a carboxylic acid group, said application being carried out in the presence of a tanning agent selected from tannic acid, vegetable tannin, condensation product of naphthol, naphthalene sulphonic acid and formaldehyde, condensation product of phenol, naphthalene, formaldehyde and sulphuric acid, condensation product of dihydroxydiphenylsulphone and bisulphite, condensation product of naphthalene sulphonic acid, dihydroxydiphenylsulphone and formaldehyde, condensation product of dihydroxydiphenylsulphone sulphonic acid and aliphatic aldehyde or condensation product of sulphurized phenol, naphthalene and formaldehyde.

3,961,882

SCULPTURED PRINTING OF NYLON CARPET

Helmuth Vits, Greenville, and Preston G. Baker, Jr., Taylors, both of S.C., assignors to Bigelow-Sanford, Inc., Greenville, S.C.

Filed July 25, 1974, Ser. No. 491,654

Int. Cl.² D06P *3/24*, *5/22*; D06Q *1/02*

U.S. Cl. 8—17 9 Claims

1. A process for imparting a sculptured design to the pile surface of a polyamide fabric which consists of applying to substantially less than all of its surface area, a printing composition containing a member selected from the group consisting of resorcinol in an amount varying between about 15 and 40% by weight, dilute sulfuric acid in an amount varying between about 10 and 15% by weight and phenol in an amount varying between about 2 and 8% by weight.

3,961,883

PROCESS FOR PRINTING A FIBER PRODUCT CONTAINING ACRYLIC FIBERS AND CELLULOSIC FIBERS

Eichiro Ueno, Wakayama; Hideo Kawasaki, Moriyama, and Syozo Shigita, Hirakata, all of Japan, assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 31, 1973, Ser. No. 411,565

Int. Cl.² D06P *3/87*

U.S. Cl. 8—21 A 10 Claims

1. A process for dyeing a product of a fiber blend consisting of from about 25 to 75 weight percent of acrylic fibers having substantially no dyesites for anionic dyes and, correspondingly from about 75 to 25 weight percent of a cellulosic fiber, which process comprises: (1) printing said fiber product with a paste comprising an acid dye having a single sulfonic acid group and a ratio of inorganicity/organicity of less than 4 and a dye selected from direct and reactive dyes; and (2) steaming the printed fiber product to fix the dyes, the acrylic fiber being

dyed with said acid dye and the cellulose fiber being dyed with the dye selected from reactive and direct dyes.

3,961,884
PROCESS FOR DYEING TEXTILE MATERIAL OF POLYESTER FIBER/CELLULOSE BLENDS

Hasso Hertel, Muhlheim, Main; Willy Gronen, Kelkheim, Taunus, and Hans Kaiser, Offenbach, Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 12, 1974, Ser. No. 505,500

Claims priority, application Germany, Sept. 15, 1973, 2346504

Int. Cl.² D06P *3/82*

U.S. Cl. 8—21 C **8 Claims**

1. In a process for the continuous dyeing of textile material consisting of blends of polyester and cellulose fibers with disperse dyestuffs and water-insoluble azo dyestuffs produced on the fiber, the improvement which comprises: padding the fibrous material with an aqueous solution which contains at least one component capable of entering azo coupling and which is suitable for ice-color dyeing, sodium hydroxide and sodium nitrite, subsequently crosspadding the material so treated with a second aqueous bath at room temperature which contains a solution, a dispersion or an emulsion of at least one amine capable of being diazotized and which is suitable for ice-color dyeing, at least one disperse dyestuff and an acidic agent, and then successively causing formation of the azo dyestuff on the fibers by diazotizing and coupling as well as fixing the disperse dyestuff by subjecting the material to an elevated temperature.

3,961,885
PROCESS FOR THE DYEING OF SYNTHETIC FIBROUS MATERIALS FROM ORGANIC SOLVENTS USING AZO DYES

Walter Birke; Franz Schön, both of Frankfurt am Main, and Willi Steckelberg, Hofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

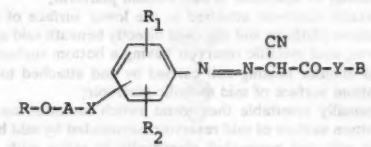
Filed Nov. 1, 1973, Ser. No. 412,017

Claims priority, application Germany, Nov. 2, 1972, 2253582

Int. Cl.² C09B *27/00*

U.S. Cl. 8—41 A **4 Claims**

1. A process for the continuous dyeing of textile materials consisting of or containing synthetic fibrous materials of the group consisting of high molecular polyamides, polyolifines, polyacrylonitriles, polyurethanes, polyvinylchlorides, polyvinylacetates, cellulose-2½-acetate, cellulose-triacetate and high molecular polyesters, from organic solvents, which comprises impregnating the said fibrous materials with organic dyebaths containing at least one dyestuff of the formula



in which R is linear or branched alkylcarbonyl of 4 to 18 carbon atoms, X is oxygen or sulfur, Y is a direct linkage or NH, A is linear or branched alkylene of 1 to 4 carbon atoms unsubstituted or substituted by methoxy, ethoxy, phenoxy or R as defined above, B is (1) phenyl unsubstituted or substituted by fluorine, chlorine, bromine, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl, cyano, carboalkoxy, nitro, acetyl, benzoyl or phenyl, or (2) naphthyl, R_1 is hydrogen or nitro, and R_2 is hydrogen, chlorine, bromine or methyl, and heating the impregnated fibrous materials to a temperature between 100°C and 240°C.

3,961,886
PROCESS FOR THE DYEING AND PRINTING OF CELLULOSE-CONTAINING TEXTILE MATERIALS

Hasso Hertel, Mulheim, and Willy Gronen, Kelkheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 12, 1974, Ser. No. 505,463

Claims priority, application Germany, Sept. 15, 1973, 23465034

Int. Cl.² D06P *1/02*

U.S. Cl. 8—44 **1 Claim**

1. A process for the continuous dyeing and printing of textile material consisting of or containing cellulose fibers, with water-insoluble azo dyestuffs produced on the fiber, which comprises padding the fiber material with an aqueous solution which contains a 2-hydroxy-naphthalene-3-carboxylic acid phenyl amide, an alkaline agent and an alkali metal nitrite, cross-padding the material thus impregnated, under conditions of room temperature, with a second aqueous bath or printing with a printing paste containing a solution, a dispersion or an emulsion of a 4-amino-diphenyl amine as well as an acidic agent, and bringing about the formation of the azo dyestuff by diazotizing and coupling by a drying process, if desired with the aid of an elevated temperature, a subsequent passage of the dyeings and prints through a hot sodium carbonate solution or both said elevated temperature and sodium carbonate treatment steps.

3,961,887
PROCESS FOR THE PRINTING OF CELLULOSE CONTAINING TEXTILE MATERIAL

Willy Gronen, Kelkheim, Taunus, and Hasso Hertel, Muhlheim, Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 9, 1973, Ser. No. 404,729

Claims priority, application Germany, Oct. 15, 1973, 2249533; Sept. 15, 1973, 2346612

Int. Cl.² C09B *27/00*

U.S. Cl. 8—71 **4 Claims**

1. A process for the printing of cellulose containing textile or textiles consisting completely of cellulose with water-insoluble azo dyestuffs produced on the fiber, which comprises: printing the material previously impregnated with alkaline liquors of (1) β-hydroxy-naphthoic acid arylamides and sodium nitrite or (2) acetoacetic acid arylamides and sodium nitrite, with a printing paste containing an aqueous dispersion of an amine suitable for ice color dyeing having a maximum grain size of 0.03 mm or less, acidifiers and a thickening, and finishing the prints after drying in usual manner by washing, soaping and rinsing.

3,961,888
ACRYLIC FIBER CONVERSION UTILIZING A STABILIZATION TREATMENT CONDUCTED INITIALLY IN AN ESSENTIALLY INERT ATMOSPHERE

John P. Riggs, Berkeley Heights, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Sept. 18, 1968, Ser. No. 760,658

Int. Cl.² D06M *3/26*; C01B *31/07*

U.S. Cl. 8—115.5 **13 Claims**

1. A process for the stabilization of an acrylic fibrous material comprising heating a fibrous material consisting primarily of recurring acrylonitrile units in an essentially inert atmosphere at a temperature of about 200°C. to 270°C. until a cyclized product is formed in the absence of appreciable oxygen cross-linking which retains its original fibrous configuration essentially intact, and subsequently heating said cyclized product in an oxygen-containing atmosphere at a temperature of about 180°C. to 325°C. until an oxygen cross-

linked stabilized fibrous product capable of undergoing carbonization is formed which retains its original fibrous configuration essentially intact and which is non-burning when subjected to an ordinary match flame.

3,961,889

PROCESS AND AUXILIARY AGENT FOR IMPROVING THE WETTABILITY OF TEXTILE MATERIAL

Walter Birke; Hans-Ulrich von der Eltz, and Franz Schön, all of Frankfurt am Main, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 5, 1974, Ser. No. 530,001

Claims priority, application Germany, Dec. 7, 1973, 2360985

Int. Cl.² D06P *1/68*

U.S. Cl. 8—115.5 **19 Claims**

1. In a process for wetting a textile material by aqueous treating liquors containing 10 to 60% by volume of a saturated aliphatic alcohol of up to 2 carbon atoms, or dyeing or finishing liquors containing such a mixture, the improvement which comprises adding to said mixture, in an amount of 1 to 8% by volume, an aliphatic, straight-chain or branched, monohydric alcohol of more than 2 carbon atoms.

3,961,890

METHOD FOR WASHING ACRYLIC FILAMENTS

Bruno Brusa; Camillo Panozzo, both of Mestre (Venezia), and Giovanni Zanini, Valdagno (Vicenza), all of Italy, assignors to Montefibre S.p.A., Milan, Italy

Filed Nov. 26, 1974, Ser. No. 527,260

Claims priority, application Italy, Nov. 29, 1973, 31930/73

Int. Cl.² D01F *6/18*; D06L *3/16*; D06M *3/18, 3/20*

U.S. Cl. 8—137.5 **4 Claims**

1. In a method for washing acrylic filaments in which acrylic filaments made from an acrylic polymer consisting essentially of acrylonitrile homopolymer or copolymer containing at least 35% of acrylonitrile, and produced by wetspinning a solution of said acrylonitrile homopolymer or copolymer in dimethylacetamide, are coagulated, with or without subsequent stretching, and are finally washed with an aqueous wash solution, the improvement wherein the aqueous wash solution contains acetic acid in a quantity between 0.0050% and 0.1% by weight and dimethylamine in such a quantity that the dimethylamine/acetic acid molar ratio is greater than 0.2.

3,961,891

ANTIBACTERIAL LAUNDRY OIL AND DUST CONTROL OIL COMPOSITION

Richard E. Ware, Aston, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Dec. 6, 1974, Ser. No. 530,475

Int. Cl.² B08C *3/00*

U.S. Cl. 8—142 **7 Claims**

1. A dust control fabric impregnated with a composition comprising a major portion of a naphthenic or paraffinic oil and from about 0.0001 to 0.10 weight percent of phenyl mercury oleate, said percent based on total weight of composition.

3,961,892

TEXTILE SOFTENING AGENTS

David Paul Bishop, and Ronald Meredith Morris, both of Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 233,343, March 9, 1972, Pat. No. 3,847,915. This application Feb. 28, 1974, Ser. No. 446,981

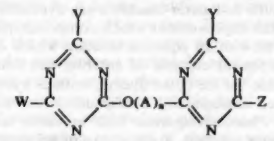
Claims priority, application United Kingdom, Mar. 18, 1971, 7179/71

Int. Cl.² D06M *13/18, 13/34*

U.S. Cl. 8—190 **4 Claims**

1. A process for conditioning a textile material composed of fibres selected from the group consisting of cellulose, regenerated cellulose, cellulose ester and cellulose ether fibres comprising

a impregnating the textile material with an aqueous composition comprising a compound of the general formula



(I)

in which A represents an ethenoxy; propenoxy; 1,2 or 2,3 butenoxy group or a combination thereof, VWYZ represent halogen, -OH, -NRR_1 or -OR_1 providing that at least one of VW and at least one of YZ is halogen and at least one of VWYZ is -OR_1 or-NRR_1, R represents hydrogen or a C_{12}-C_{30} linear or branched chain alkyl group, R_1 represents a C_{12}-C_{30} linear or branched chain alkyl group, n=1-80

b treating the impregnated material with an aqueous solution containing an acid binding agent and having a pH of at least 7.5;

c heating the treated textile material at a temperature of 100° to 150°C for a time effective to fix the compound.

3,961,893

STEAM DISINFECTOR FOR CONTACT LENSES

James S. Russell, and Arthur G. Nelson, both of Rancho Santa Fe, Calif., assignors to Hydrotherm Corporation, San Diego, Calif.

Filed Oct. 17, 1974, Ser. No. 515,700

Int. Cl.² A61L *3/00*; H05B *1/00*

U.S. Cl. 21—95 **1 Claim**

1. A disinfector comprising:

a plastic main housing;

a recess in said main housing terminating in a bottom platform having upper and lower surfaces, said recess and bottom platform forming a lens well, said lens well dimensioned for receiving a standard lens carrier;

a plurality of apertures in said bottom platform;

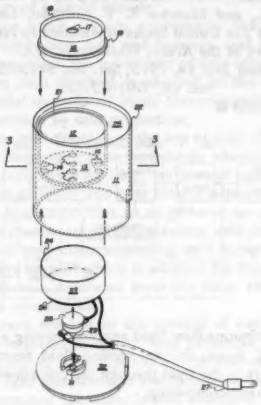
a metallic reservoir attached to the lower surface of said bottom platform and disposed directly beneath said apertures, said metallic reservoir having a bottom surface;

a flat annular heating coil carried by and attached to the bottom surface of said metallic reservoir;

a manually resettable thermostat switch mounted on the bottom surface of said reservoir surrounded by said heating coil and connected electrically in series with said heating coil, said thermostat switch being operable for opening the electrical connection upon an increase in temperature when said reservoir is empty; and

a cap removably covering said recess whereby upon placing water in said reservoir and placing a lens carrier with contact lenses therein in said well and applying electrical power to said heating coil, boiling water in the reservoir will cause steam to pass through said apertures, heating said lens carrier therein and disinfecting said lenses, said cap being dimensioned for carrying a predetermined

volume of water for emptying into said reservoir and disinfecting any contact lens in a lens carrier in the lens

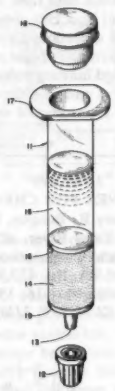


well during a period required for boiling out of said predetermined volume of water.

3,961,894
TEST FOR DETERMINATION OF TRIIODOTHYRONINE

Amirav Gordon, and Jack Gross, both of Jerusalem, Israel, assignors to Yissum Research Development Company, Jerusalem, Israel

Filed Apr. 22, 1974, Ser. No. 462,882
Claims priority, application Israel, Apr. 24, 1973, 42105
Int. Cl.² G01N *33/16*; G21H *5/02*
U.S. Cl. 23—230.6 **11 Claims**



1. A method for the in vitro determination of triiodothyronine in a biological fluid sample comprising the steps of:

a. adding to a column containing a crosslinked dextran gel at a pH of at least about 10.5 or less than about 3 a predetermined quantity of said fluid sample and a quantity of radioactive labeled triiodothyronine,

b. washing said column with an aqueous solution having a pH of between about 6 and 9,

c. adding to said column a predetermined quantity of antibody to triiodothyronine,

d. incubating said column,

e. washing said column with an aqueous solution to substantially remove the antibody-bound-triiodothyronine,

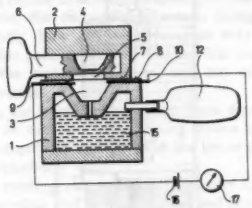
f. determining the ratio of radioactive labeled triiodothyronine retained in said column after step (*e*) to that added in step (*a*), and

g. comparing the ratio determined in step (*f*) to ratios obtained using standard samples containing known amounts of triiodothyronine.

3,961,895
PROCESS AND EQUIPMENT FOR THE DETERMINATION OF CERTAIN COMPONENTS, PARTICULARLY THE CARBON DIOXIDE CONTENT OF GAS MIXTURE

Vilmos Frenyo, Budapest, Hungary, assignor to Novex Talalmanyfejleszto es Ertekesito Kulkereskedelmi Rt., Budapest, Hungary

Filed Mar. 17, 1975, Ser. No. 559,044
Claims priority, application Hungary, June 26, 1974, NO 184
Int. Cl.² G01N *27/06*, *31/06*
U.S. Cl. 23—232 E **6 Claims**

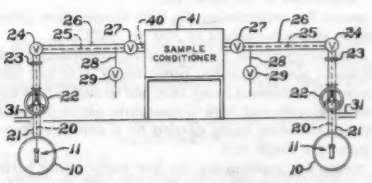


1. A process for the determination of the content of a component of a gaseous mixture, comprising supporting on a solid surface a thin film of a liquid reagent that reacts with said component to change the electrical resistance of the reagent, exposing an exposed surface of said film to a gas to be tested for said component, and measuring the variation of electrical resistance of said film.

3,961,896
ANALYSIS OF NITRILE SYNTHESIS GAS STREAMS

Bobby Eugene Dunn, Murray, Ky., assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 500,802, Aug. 26, 1974, which is a division of Ser. No. 291,741, Sept. 25, 1972, abandoned. This application Nov. 28, 1975, Ser. No. 635,963
Int. Cl.² G01N *33/00*; C07C *121/04*
U.S. Cl. 23—232 R **3 Claims**



1. In a method of analyzing the effluent gases resulting from an ammoxidation process wherein a mixture of an aliphatic alpha-monoolefin containing from 2 to 6 carbon atoms per molecule, ammonia and oxygen are passed through a solid ammoxidation catalyst at temperatures in the range of from about 550° to 1150°F. to produce a corresponding unsatu-

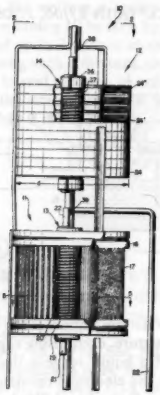
rated aliphatic nitrile, the improvement which comprises withdrawing a portion of the gases leaving said catalyst and cooling same to a temperature in the range of from about 350° to about 450°F., removing solids larger than about 5 microns in diameter therefrom, and subjecting the resulting filtered and temperature-conditioned gas to analysis.

3,961,897

GETTER PUMP

Tiziano A. Giorgi, and Stephen John Hellier, both of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy

Filed Aug. 30, 1974, Ser. No. 502,092
Claims priority, application Italy, Oct. 1, 1973, 29588/73
Int. Cl.² B01J *1/22*; F04B *37/04*, *37/06*; F04F *11/00*
U.S. Cl. 23—252 R **14 Claims**



1. A getter pump useful for pumping hydrocarbons comprising:

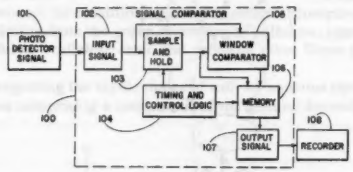
A. a high temperature getter element comprising:
1. a metallic substrate,
2. non-evaporable getter metal in the form of particles embedded in the substrate,
B. means for maintaining the high temperature getter element at a temperature of 350° to 700°C,
C. a low temperature getter element comprising a cohesive mass of non-evaporable getter metal, said low temperature getter element being attached to and in flow communication with said high temperature getter element, said getter elements being carried by a common frame and forming a single unit
D. means for maintaining the low temperature getter element at a temperature of 50° to 300°C,
E. means for maintaining a temperature differential of at least 100°C between the low temperature getter element and the high temperature getter element,
F. means for cracking the hydrocarbons,
wherein the weight ratio of the getter metal of the low temperature getter element to the getter metal of the high temperature getter element is at least 1:2.

3,961,898

COMPARATOR CIRCUIT FOR AUTOMATIC ANALYSIS APPARATUS

William E. Neeley, Rockville, Md.; Stephen C. Wardlaw, Branford, Conn., and Maurice E. T. Swinnen, Lanham, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 14, 1975, Ser. No. 541,033
Int. Cl.² G01N *21/26*
U.S. Cl. 23—253 R **5 Claims**



1. In a continuous-flow fluid analyzer having a colorimeter flow cell and means for conducting fluid segmented by a substance inert to the fluid through the colorimeter flow cell, the improvement comprising:

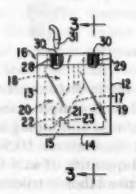
a. sampling and storing circuit means receiving signals from the flow cell;
b. memory and recording means connected to and receiving signals from said sampling and storing means;
c. differentiator circuit means connected to said sampling and storing means and to said memory and recording means for limiting voltages received by said memory and recording means;
d. logic circuit means including interconnected repetitive pulse generating means, counter means, decoder means and flip-flop circuit means connected to said sampling and storing circuit means and said memory and recording circuit means, said differentiating circuit means selectively controlling said flip-flop circuit means, whereby a selected output signal from said colorimeter flow cell is stored in said storing circuit means and compared with succeeding signals from said flow cell during a cycle of repetitive pulses, said flow cell output signals conducted to said memory and recording circuit means selectively when the voltage difference of said succeeding and stored pulses does not exceed limiting voltages set by said differentiator circuit means and said flip-flop circuit means is activated to permit recording of said selected flow cell output signals.

3,961,899

REACTION CONTAINER FOR CHEMICAL ANALYSIS

Ramesh C. Trivedi; Henry R. Bungay, III, both of Freehold, and Paul J. Cuccolo, Toms River, all of N.J., assignors to Worthington Biochemical Corporation, Freehold, N.J.

Continuation-in-part of Ser. No. 473,942, May 28, 1974, abandoned. This application May 16, 1975, Ser. No. 578,147
Int. Cl.² G01N *31/00*
U.S. Cl. 23—253 R **20 Claims**



1. A disposable reaction container which is composed of rigid or semi-rigid material and which comprises:

a receptacle comprising spaced-apart side walls of substantial lateral extent, a bottom wall and end walls, the inner surfaces of said walls defining a chamber which when upright is open at the top and which is adapted for the retention of a liquid therein;

a projection which extends a substantial distance upwardly from said bottom wall and between said side walls and which separates the lower part of said chamber into two portions each of which is adapted for the retention of a substantial quantity of liquid therein separated from the other portion by said projection;

a cover for said opening at the top of said chamber;

a divider depending from said cover which is contiguous, respectively, with the inner surfaces of said side wall and which at its lower end is in closely adjacent spaced relation to said projection so as to leave an opening of restricted cross section therebetween, said divider together with said projection separating said receptacle into two chambers each of which is adapted for the retention of a liquid therein separated from the other chamber except for said opening; and

a transparent window in the portion of each of said side walls comprised in one of said chambers, said windows being adapted and disposed for the successive transmission of light therethrough and through a body of liquid of predetermined thickness in said chamber.

3,961,900

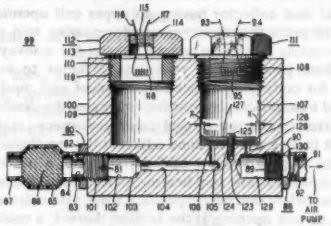
COMBUSTIBLE VAPOR DETECTOR

Louis Gintella, Gillette; Harry Kundrat, New Providence, and Anantha K. S. Raman, Gillette, all of N.J., assignors to Catalytic Pollution Controls, Inc., Gillette, N.J.

Continuation-in-part of Ser. No. 367,239, June 5, 1973, abandoned. This application Aug. 1, 1975, Ser. No. 601,081

Int. Cl.² G01N *27/16, 33/22;* G08B *21/00*

U.S. Cl. 23—254 E **2 Claims**



1. Apparatus for detecting combustible vapors comprising:

heat sink means, the structure of the heat sink means defining a reference chamber and a sensing chamber;

the sensing chamber being characterized by a lower section which has a bottom portion and sidewalls which have a preselected interior perimeter;

the reference chamber being essentially sealed;

at least one entrance passage and one exit passage being physically separated one from the other and both being located in the bottom portion of the lower section of the sensing chamber;

first and second essentially identical filament means, both of the filament means being adapted to vary in resistive value as a function of the amount of combustible vapor present in air which comes into contact with the filament means;

first circuit means coupled to the first and second filament means, the first circuit means being adapted to generate a first alarm signal if either filament means breaks or burns out;

the first and second filament means being located essentially within the sensing chamber and reference chamber, respectively;

second circuit means comprising a wheatstone bridge circuit having first and second resistive circuit legs, the first leg comprising the first and second filament means, the resistive value of the first and second legs being selected such that when there are substantially no combustible vapors in the sensing and reference chambers the wheatstone bridge is unbalanced, however, if there is a significant amount of combustible vapor in the sensing chamber and substantially none in the reference chamber, the wheatstone bridge goes through balance to an unbalanced condition in the reverse direction;

alarm circuit means being coupled to the wheatstone bridge, the alarm circuit means being adapted to generate a second alarm signal if and only if the wheatstone bridge goes through balance to an unbalanced condition in the reverse direction;

first conduit means in open communication with the entrance passage of the bottom portion of the lower section of the sensing chamber;

second conduit means in open communication with the exit passage of the bottom portion of the lower section of the sensing chamber;

air pumping means in communication with the second conduit means, the air pumping means being adapted to continuously draw air, which may or may not contain combustible gases or vapors, into the first conduit means, through the sensing chamber, and out of the second conduit means;

air sampling and calming means and flame arresting means, both the air sampling and calming means and the flame arresting means being located in the lower section of the sensing chamber;

the flame arresting means being physically located below the air sampling and calming means and being located so as to overlap the entrance and exit passages in the sensing chamber;

the air sampling and calming means being an essentially solid non-porous member, the outer perimeter of the member being slightly smaller than the interior perimeter of the sidewalls of the lower section of the sensing chamber such that a relatively small space exists between the sidewalls of the lower section of the sensing chamber and the air sampling and calming means; and

the air sampling and calming means having a much higher resistance to the flow of air therepast than the flame arresting means such that only a relatively small amount of the total air continuously drawn into the sensing chamber by the air pumping means continuously passes above the air sampling and calming means and enters the portion of the sensing chamber which contains the sensing filament.

3,961,901

ALKYLATION ACID END POINT DETECTOR

Charles R. Beavens, Port Arthur, and Kenneth O. Higgs, Port Neches, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,757

Int. Cl.² G01N *31/16*

U.S. Cl. 23—253 R **7 Claims**

1. Alkylation acid end-point detector, comprising in combination,

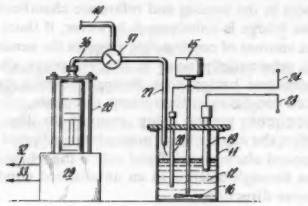
an electrical cell for generating a potential that is proportional to the acidity pH of said alkylation acid,

an amplifier for increasing the amplitude of said potential,

means connected to said amplifier for differentiating said amplified potential in order to produce a first derivative signal from said potential,

means connected to said differentiator for amplifying said first derivative signal to produce a first acid end-point signal,

a noise filter connected between said cell and said first named amplifier, and



voltage comparison means connected to said first derivative amplifying means for producing a second acid end-point signal when said first acid end-point signal has reached a predetermined amplitude.

3,961,902

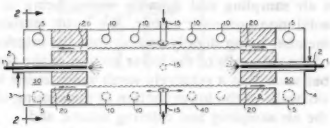
CARBON BLACK REACTOR

John W. Vanderveen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 313,538, Dec. 8, 1972, Pat. No. 3,865,926. This application Dec. 4, 1974, Ser. No. 529,667

Int. Cl.² C01B 49/00

U.S. Cl. 23—259.5 5 Claims



1. A carbon black reactor comprising:

a. a tubular chamber having a first and second end closed by a first and a second wall,

b. first conduit means for feeding hydrocarbon feed along the axis of the reactor into said reactor proximate the first end of said chamber,

c. second conduit means comprising a plurality of conduits opening tangentially into said chamber at a plurality of loci positioned along the longitudinal axis of said chamber and substantially equally spaced over the entire length of said chamber,

d. third conduit means for introducing fuel into said reactor, the fuel outlet of said means being located approximately in the center between the two ends of said chamber for discharge of fuel in about equal amounts towards both ends of said chamber,

e. fourth means for withdrawal of carbon black-containing gas from said reactor, said fourth means being located proximate to the locus of said first conduit means,

f. fifth conduit means for introducing hydrocarbon feed or oxidant into said chamber along its longitudinal axis, said fifth conduit means being arranged proximate to the second end of said chamber, and

g. sixth means for withdrawal of carbon black-containing gas from said reactor, said sixth means being located proximate to the locus of said fifth conduit means.

3,961,903

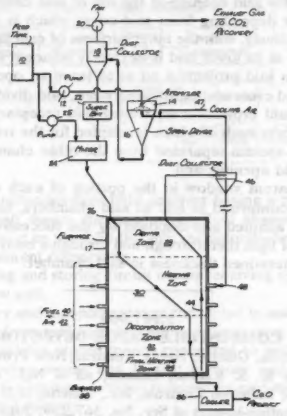
APPARATUS FOR RECLAIMING LIMESTONE MUD

Haagen Bach Nielsen, Glen Ridge, N.J.; Edwin J. Bonner, Staten Island, and Ernest A. Lado, Hastings-on-Hudson, both of N.Y., assignors to Nichols Engineering & Research Corporation, Belle Mead, N.J.

Division of Ser. No. 210,075, Dec. 20, 1971, Pat. No. 3,796,791. This application Oct. 11, 1973, Ser. No. 405,304

Int. Cl.² B01J 6/00; C04B 3/00

U.S. Cl. 23—262 6 Claims



1. A system for reclaiming limestone mud comprising a spray dryer for directly receiving a portion of said mud to be reclaimed, a calciner furnace, means for passing hot exhaust gases from said calciner furnace to said spray dryer, a dust collector, means for passing dry powder together with exhaust gases from the bottom of said spray dryer to said dust collector, said dust collector having an upper exit opening for discharging gases therefrom, means for passing said gases to a recarbonating station, a mixer, means for conveying dried spent lime powder from said dust collector to said mixer, means for conveying a second portion of said mud to be reclaimed to said mixer, means for conveying the discharge from said mixer to the top of said calciner furnace, said calciner furnace having a drying zone adjacent the top thereof, a heating zone disposed below said drying zone, a decomposition zone disposed below said heating zone, a second heating zone disposed below said decomposition zone, said calciner furnace having an exit opening at the bottom thereof, a cooler, means for carrying calcined lime from said exit opening to said cooler, said cooler having an outlet for discharging the calcined lime product.

3,961,904

CRYSTALLIZATION APPARATUS

Richard C. Bennett, Park Forest, Ill., assignor to Whiting Corporation, Harvey, Ill.

Continuation-in-part of Ser. No. 246,439, April 21, 1972, Pat. No. 3,873,275, which is a continuation of Ser. No. 861,805, Sept. 29, 1969, abandoned. This application Mar. 24, 1975, Ser. No. 561,256

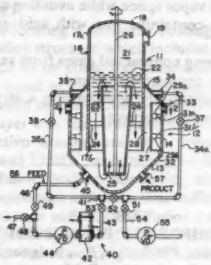
The portion of the term of this patent subsequent to Mar. 25, 1992, has been disclaimed.

Int. Cl.² B01D 9/02

U.S. Cl. 23—273 R 16 Claims

1. An improved crystallization apparatus, comprising a vessel adapted to contain a body of slurry which includes crystal particles and liquid, first means for maintaining supersaturation conditions in the slurry body to induce crystallization therein, second means in said crystallization apparatus for

circulating said slurry in a predetermined flow path in said vessel and for maintaining said crystal particles in suspension, third means for selectively removing a stream of slurry liquid and crystal particles which are below a predetermined size only from said slurry body and fourth means for selectively regulating the volume of slurry liquid and crystal particles in said stream independently of the size of the crystal particles in said stream, said third means including an elutriation column and flow regulating means operatively associated therewith, said elutriation column having an inlet adjacent its lower end



communicating with said body of slurry adjacent the periphery of said predetermined flow path and an outlet located at least a substantial height above said inlet, said flow regulating means being operatively associated with said outlet for withdrawing slurry from said elutriation column at a rate which can be selectively controlled to establish a desired flow velocity in said elutriation column for suspending and removing from said slurry body crystal particles which are below a predetermined size only, said fourth means including means for selectively varying the cross-sectional area of said elutriation column.

3,961,905

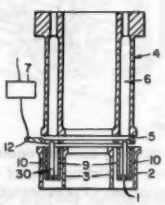
CRUCIBLE AND HEATER ASSEMBLY FOR CRYSTAL GROWTH FROM A MELT

Dale W. Rice, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 25, 1974, Ser. No. 445,630

Int. Cl.[2] B01D *9/00;* **B01J** *17/18;* **F27B** *14/10*

U.S. Cl. 23—273 SP **8 Claims**



1. In an apparatus for growing and pulling a plurality of crystalline articles from a melt of an inorganic, crystalline material, an improved crucible for containing the melt which comprises an annular channel with a generally U shaped cross-section adapted to contain the melt therein,

a plurality of spaced forming members disposed in ring-like arrangement within the crucible and haivng upper portions adapted to be above the surface of the melt in the crucible, the upper portions including means for shaping and feeding the melt to a crystallization zone in which the articles grow, and the forming members including means for conveying melt from the crucible to the upper portions,

a vertically adjustable ring-shaped heating element positioned concentric with the crucible and above the melt therein for providing heat to the upper portions and the crystallization zone, and having a plurality of apertures therethrough adapted and arranged to have the upper portions positioned at least partially therein in substantial axial alignment with axes of the apertures, and

means operatively connected to the ring-shaped heating element for independently controlling the heat output thereof.

3,961,906

APPARATUS FOR CRUCIBLE-FREE ZONE MELTING OF SEMICONDUCTOR CRYSTAL RODS INCLUDING OSCILLATION DAMPENING MATERIAL

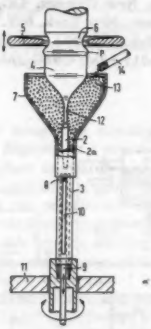
Wolfgang Keller, Munich, Germany, Assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Division of Ser. No. 525,641, Nov. 20, 1974, Pat. No. 3,923,468. This application May 27, 1975, Ser. No. 580,548

Claims priority, application Germany, Nov. 22, 1973, 2358300

Int. Cl.[2] B01J *17/10*

U.S. Cl. 23—273 SP **2 Claims**



1. A device for crucible-free zone melt processing of a semiconductor rod comprising an operative crucible-free zone melt apparatus including two vertically opposing approximately coaxially mounted members for supporting a semiconductor rod within said apparatus; and a funnel-shaped support means coupled to one of said mounting members in an axially movable manner in relation to said one mounting member, said support means comprising a funnel-shaped casing filled with a self-adjusting oscillation dampening material selected from the group consisting of silicon particles, quartz particles, sand, and metal spheroids, said support means being moveable to an uppermost position for encompassing a cone area of the rod above said one mounting member.

3,961,907

CATALYTIC CONVERTER

James R. Close, Roberts, Wis.; William P. Wood, Stillwater; Robert A. Hatch, St. Paul, and James R. Johnson, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

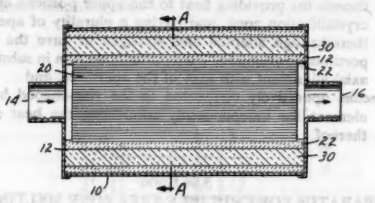
Filed Dec. 8, 1972, Ser. No. 313,272

Int. Cl.[3] F01N *3/15;* **B01J** *8/00*

U.S. Cl. 23—288 FC **11 Claims**

1. A cannister comprising a casing having openings therein for introduction and exhaust of a gas stream, at least one frangible monolithic catalyst support within said casing and spaced therefrom, said catalyst support having passageways therethrough and containing catalyst thereon, said passage-

ways providing open ends aligned with the openings of said casing, and said casing further comprising resilient inorganic sheet material and high temperature resistant cellular foam



encircling the girth of said catalyst support within the space between said casing and said catalyst support, said cellular foam exerting pressure firmly securing said sheet material and said catalyst in said casing.

3,961,908

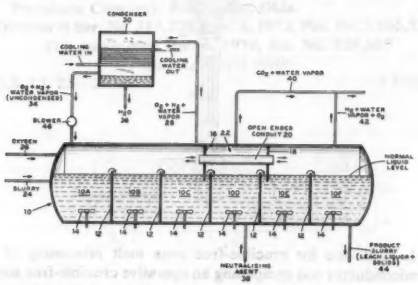
AUTOCLAVE SYSTEM FOR LEACHING SULFIDE CONCENTRATES

Freddie J. Touro, New Orleans, La., assignor to Freeport Minerals Company, New York, N.Y.

Filed Feb. 27, 1974, Ser. No. 446,412

Int. Cl.² B01J *3/04*; C01G *3/02*; C22B *15/00*

U.S. Cl. 23—290 **9 Claims**



1. Apparatus for the leaching of ores comprising:

a horizontally disposed autoclave having means for establishing a predetermined normal liquid level and a vapor space above the liquid level in said autoclave,

means for supplying a slurry of ore into said autoclave,

upstanding baffle means within said autoclave, disposed along the horizontal length of said autoclave and dividing said autoclave into at least three compartments, which include an upstream compartment, a downstream compartment, and a compartment intermediate said upstream and downstream compartments,

said baffle means further comprising upper edges above the predetermined normal liquid level in said autoclave which allow overflow movement of said slurry between said compartments during operation of said autoclave,

means isolating the vapor space above said intermediate compartment from the vapor space above said upstream and downstream compartments,

means interconnecting the vapor space above said upstream and downstream compartments whereby vapor can move freely between said upstream and downstream compartments but cannot enter said isolated vapor space above said intermediate compartment,

means for supplying an oxygen-containing gas into said autoclave other than in said isolated vapor space,

means for agitating and intermixing said slurry with said oxygen-containg gas,

means for maintaining the temperature of said slurry within said autoclave,

means for maintaining the pressure of said oxygen-containing gas within said autoclave,

means for introducing a neutralizing agent into said intermediate compartment so that gaseous reaction products of said neutralizing agent and said slurry are contained within said isolated vapor space above said intermediate compartment,

means for removing said gaseous reaction products from said isolated vapor space while avoiding contamination of said oxygen-containing gas with said gaseous reaction products,

means for purging nonreacted gases from said upstream and downstream compartments, and

means for continuously withdrawing a stream of product slurry from said autoclave.

3,961,909

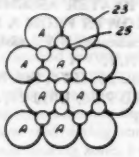
UNIFORMLY POROUS BODY

Zalman M. Shapiro, Pittsburgh, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 289,196, Sept. 14, 1972, abandoned, which is a division of Ser. No. 751,680, July 29, 1968, Pat. No. 3,762,026, which is a continuation of Ser. No. 250,112, Jan. 8, 1963, abandoned. This application Jan. 17, 1975, Ser. No. 541,755

Int. Cl.² B22F *1/02*, *3/10*

U.S. Cl. 29—192 CP **4 Claims**



1. A body of substantially uniform communicating porosity throughout, said body consisting only of the combination of spheres of a plurality of sets of preselected size and refractory material deposited in the interior of the porous body for bonding together all said spheres, the largest spheres being generally tangent with adjacent largest spheres in order to define void spaces therebetween, the diameter of each set of small spheres being selected within the range from one-tenth to one-fifth of the diameter of the next larger set of spheres, each smaller set of spheres being nested substantially uniformly in the void spaces defined amongst the spheres of larger size and defining smaller void spaces thereby, the refractory material being deposited in the interior of the porous body to partially fill some of the void spaces to bond all of said spheres together and establish a porosity of selected amount without significant alteration in the geometry and uniformity of the pores.

3,961,910

RHODIUM-CONTAINING SUPERALLOY COATINGS AND METHODS OF MAKING SAME

Gregor Baladjanian, Santa Monica, and Eugene V. Clark, Northridge, both of Calif., assignors to Chromalloy American Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 364,035, May 25, 1973, abandoned, which is a continuation-in-part of Ser. No. 160,013, July 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 115,251, Feb. 16, 1972, abandoned. This application Jan. 8, 1975, Ser. No. 539,391

Int. Cl.² C23C 9/02; C23F 17/00

U.S. Cl. 29—197 19 Claims

1. Method of forming a diffusion coating on a nickel base or cobalt base alloy structure which includes applying onto the structure surface to be coated an adherent layer of rhodium having a depth equal to between 5 percent and 35 percent of the intended depth of the diffusion coated base, prediffusing said rhodium layer into the structure surface under a nonoxidizing nonreactive atmosphere at a temperature between about 1400°F. and 2350°F., and thereafter diffusing aluminum into the prediffused rhodium containing structure surface at an elevated temperature and for a time sufficient to form with the rhodium and base metal said diffusion coating, whereby as a result of said prediffusing said alloy structure has a diffusion coating the inner boundary portion of which is relatively rich in rhodium.

3,961,911

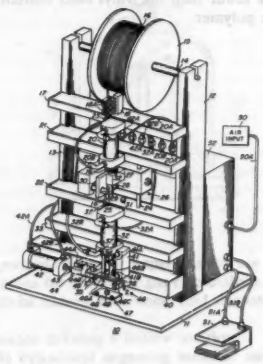
TUBE CUTTING AND INSERTING MACHINE

Orland W. Ericksen, Park Ridge, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Jan. 30, 1975, Ser. No. 545,270

Int. Cl.² H01R 43/04

U.S. Cl. 29—203 B 10 Claims



1. A machine for inserting tubing onto a contact member comprising:

a base;

support means associated with said base for holding a supply of continuous tubular material having a predetermined internal dimension and an end portion;

means coupled to said base for feeding said end portion a predetermined amount;

means coupled to said base fo cutting a predetermined length of said tubular material from said end portion and locating said cut tubing length in a predetermined position;

means coupled to said base, including a push rod having a reduced end portion smaller than said predetermined internal dimension and adapted for fitting therein, for inserting said cut tubing length from said predetermined position onto said contact member;

means coupled to said base for sequentially activating said feeding, cutting, and insertion means according to a predetermined timing relationship; and

means coupled to said sequencing means for actuating said sequencing means.

3,961,912

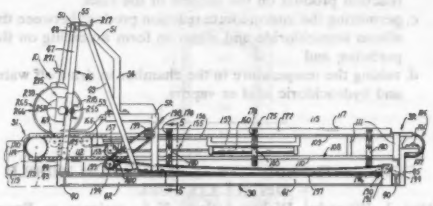
MACHINE FOR ASSEMBLING REELS AND THE LIKE

Roane C. Noel, Orange, Calif., assignor to The Wickes Corporation, Del.

Filed Jan. 9, 1975, Ser. No. 539,638

Int. Cl.² B23P 19/00

U.S. Cl. 29—200 P 23 Claims



17. A machine for assembling structures composed of a plurality of segments disposed in a preselected configuration and united with members endwardly connected to the segments, the machine comprising a guide frame having a concave surface defining the preselected configuration; means associated with the guide frame for conveying said plurality of segments disposed in side-by-side abutting relation on to the concave surface of the guide frame while holding said segments in abutting relation to be guided by said guide frame into the preselected configuration; and means for conveying said members into endward engagement with the segments.

3,961,913

PROCESS FOR TREATING ORGANIC WASTES AND PRODUCT THEREOF

Richard S. Brenneman, Natick, and John J. Clancy, Westwood, both of Mass., assignors to Combustion Equipment Associates, Inc., New York, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,338

Int. Cl.² C10L 9/02, 5/00, 1/32

U.S. Cl. 44—1 D 58 Claims

22. A process for forming a combustible fuel from solid municipal waste containing an organic waste fraction and an inorganic waste fraction, comprising the steps of

a. treating the solid organic waste fraction of solid municipal waste with up to 11% of mineral acid based on the weight of said solid organic waste fraction, and elevated temperature under conditions to form an embrittled material without effecting any substantial carbonization, any substantial pyrolysis, any substantial decomposition or any substantial loss in dry weight of said waste component; and

b. reducing the resulting embrittled material to a finely divided form.

35. A process in accordance with claim 22 including the step of mixing said embrittled material in finely divided form with a primary fuel.

36. A process in accordance with claim 35 wherein said primary fuel is in fluid form.

42. A process in accordance with claim 35 wherein said primary fuel is a solid fuel.

3,961,914

PROCESS FOR TREATING COAL TO MAKE IT RESISTANT TO SPONTANEOUS COMBUSTION

James K. Kindig, Arvada, and Ronald L. Turner, Lakewood, both of Colo., assignors to Hazen Research, Inc., Golden, Colo.

Filed July 26, 1974, Ser. No. 492,257
Int. Cl.² C10L 9/00
U.S. Cl. 44—1 R 16 Claims

1. A process for making coal resistant to spontaneous combustion which comprises coating the coal in particulate form with a thin coating of silicon dioxide.

8. The process of claim 1 in which the coal particles are coated in accordance with the following process steps:

a. introducing coal particles into a coating chamber;
b. introducing silicon tetrachloride into the chamber under conditions that will promote its combination with water either introduced into the chamber in a separate stream or derived from the coal itself to form an intermediate reaction product on the surface of the coal;
c. permitting the intermediate reaction product between the silicon tetrachloride and water to form a coating on the particles; and
d. raising the temperature in the chamber to drive off water and hydrochloric acid as vapors.

3,961,915

SYNERGISTIC ADDITIVE IN PETROLEUM MIDDLE DISTILLATE FUEL

Max J. Wisotsky, Highland Park, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Dec. 27, 1974, Ser. No. 536,723
Int. Cl.² C10L 1/20
U.S. Cl. 44—62 6 Claims

1. A fuel oil improved in its cold flow characteristics, comprising a major proportion of an atmospheric distillate petroleum oil and in the range of 0.01 to 3 wt. % of a synergistic cold flow improving combination of 0.3 to 10 parts by weight of wool fat, per part by weight of an auxiliary oil-soluble flow improving material selected from the group consisting of:

Friedel-Crafts condensation product of wax having a melting point of about 38° to 94°C. halogenated to about .5 to 25 wt. % halogen and condensed with an aromatic hydrocarbon, in a relative weight ratio of about 5 to 15 parts of halogenated wax per part of said hydrocarbon; and

ester polymer having a molecular weight in the range of about 5,000 to 1,000,000 and being a polymer of a C_8 to C_{18} alkyl ester of C_3 to C_8 monoethylenically unsaturated acid.

3,961,916

MIDDLE DISTILLATE COMPOSITIONS WITH IMPROVED FILTERABILITY AND PROCESS THEREFOR

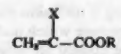
Stephen Ilnyckyj, Maplewood, N.J., and Charles O. Cole, Sarnia, Canada, assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 224,612, Feb. 8, 1972, abandoned, which is a continuation-in-part of Ser. No. 115,714, Feb. 16, 1971, abandoned. This application Feb. 28, 1974, Ser. No. 446,596
Int. Cl.² C10L 1/18
U.S. Cl. 44—62 11 Claims

1. A fuel oil composition comprising a major proportion of a middle distillate fuel oil containing n-paraffin wax which crystallizes from said oil during cooling, and in the range of about 0.005 to 0.1 wt.% of a synergistic flow improving combination comprising:

a. a wax nucleator which raises the temperature at which the onset of wax crystallization from said fuel oil occurs during cooling, said nucleator being soluble in said oil at temperatures substantially above the saturation temperature of said wax in said oil but which begins to separate out from the oil as the oil is cooled towards said saturation temperature, and
b. a wax growth arrester which when added to said fuel oil lowers the temperature at which wax begins to crystallize from said oil during cooling, said growth arrester being a pour point depressant,

both of said (a) and (b) being separately prepared synthetic polymers which are copolymers consisting essentially of ethylene with an ethylenically unsaturated ester selected from the group consisting of vinyl acetate, vinyl ester of a C_3 to C_7 saturated fatty acid, and compounds of the formula:



wherein: X is selected from the group consisting of hydrogen and C_2 to C_7 alkyl groups, and R is a C_2 to C_8 alkyl group;

said (a) synthetic polymer having a number average molecular weight (VPO) in the range of 500 to 10,000 and containing in the range of 0.3 to 12 mole % of said unsaturated ester;

said (b) synthetic polymer having a number average molecular weight (VPO) in the range of 1,200 to 20,000;

said (a) and (b) synthetic polymers being present in a relative weight ratio of 1 to 20 parts of (a) synthetic polymer per 1 to 100 parts of (b) synthetic polymer;

said (a) and (b) synthetic polymers differing from each other in at least one of the following characteristics: specific unsaturated ester monomer utilized in the polymer, amount of ethylene present relative to the respective comonomer, the amount of branching, and molecular weight;

and wherein, when both of said (a) and (b) synthetic polymers are copolymers of ethylene and a vinyl ester, the vinyl ester content of (a) synthetic polymer is at least 5 weight % lower than the vinyl ester content of the (b) synthetic polymer.

3,961,917

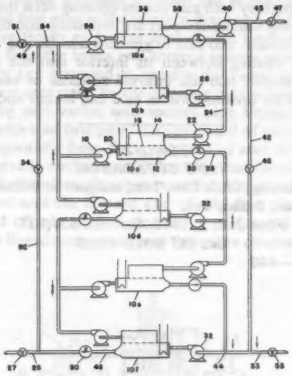
METHOD OF INDEPENDENTLY OPERATING A GROUP OF STAGES WITHIN A DIFFUSION CASCADE

Manson Benedict, Westfield; Allen J. Frult, Millington, and Horace B. Levey, Bloomfield, all of N.J., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed July 13, 1949, Ser. No. 104,404
Int. Cl.² B01D 59/12
U.S. Cl. 55—16 4 Claims

1. A method of operating a group of the diffusion stages of a productive diffusion cascade with countercurrent flow, said group comprising a top and a bottom stage, which comprises isolating said group from said cascade, circulating the diffused gas produced in said top stage to the feed of said bottom stage

while at the same time circulating the undiffused gas from said bottom stage to the feed of said top stage whereby major



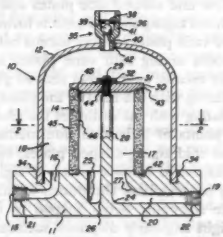
changes in inventory distribution within the group of stages are prevented.

3,961,918

METHOD AND APPARATUS FOR DEGASSING LIQUIDS

Thomas B. Johnson, 2428 Chicago Ave., South, Minneapolis, Minn. 55404

Continuation of Ser. No. 236,033, March 20, 1972, abandoned. This application Apr. 4, 1974, Ser. No. 457,920
Int. Cl.² B01D *19/00, 39/16*
U.S. Cl. 55—170 2 Claims



1. An improved degassing apparatus for use with artificial kidney machines for obtaining gas-free dialysis liquid for use in said artificial kidney machines, said degassing apparatus comprising:

housing means defining a hollow interior;

a generally cylindrical degassing member mounted in said housing and cooperating therewith to divide said interior into the outer and inner chambers, said degassing member having outer and inner surfaces each defining a wall of said outer and inner chambers respectively;

means for supplying a liquid containing entrained and dissolved air to said outer chamber for exposure to the outer surface of said degassing member, and for passage through said degassing member only into said inner chamber;

said degassing member being constructed of finely entwined porous epoxy resin having physical properties and density sufficient to cause the entrained and dissolved air in the liquid to coalesce near the outer surface of the degassing member as the result of the passage of said liquid only through said degassing member;

and vent means including a float valve in said housing means for discharge of air from said outer chamber, said float valve being disposed to prevent escape of liquid through said vent means;

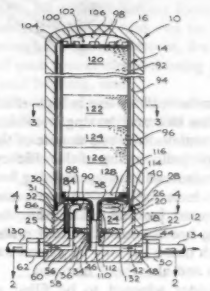
said housing defining a passageway for discharge of degassed liquid from said inner chamber.

3,961,919

GAS-VAPOR SEPARATING AND GAS PURIFYING APPARATUS

Charles L. Lamoreaux, 28012 Santona Drive, Rancho Palos Verdes, Calif. 90274

Filed June 23, 1975, Ser. No. 589,387
Int. Cl.² B01D *53/24*
U.S. Cl. 55—184 18 Claims



1. A combination gas-vapor separating and gas purifying apparatus, which comprises:

a. a pressure vessel having a closable opening, a base portion of said vessel having formed therein a vapor separating chamber in communication with other portions of the inside of said vessel, said base portion also having formed therein inlet, outlet and drain passages,

said inlet passage communicating through said base portion with said separating chamber,

said outlet passage communicating through said base portion with an inside portion of said vessel,

said drain passage communicating through said base portion with said separating chamber;

b. purifying means adapted for purifying a gas, said purifying means including a removable purifying element disposed within said vessel and installable through said closable opening,

said purifying element having a gas permeable upper portion and an open lower portion, and being formed to provide a generally annular passageway between outer portions thereof and adjacent inside portions of said vessel from said separating chamber to said permeable upper filter portion;

c. means for connecting said lower open portion of said filter to said outlet passage; and

d. vortexing means for causing a pressurized mixture of gas and vapor supplied to said base inlet passage to vortex around said separating chamber and upwardly around and through said annular passageway to cause separation of said vapor from said gas by centrifugal action, substantially vapor-free gas being passed to said permeable portion of said purifying element and liquefied, separated vapor being collected in said separating chamber.

3,961,920

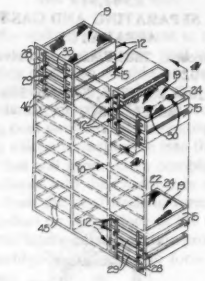
GAS ADSORBER CELL TEST SAMPLER

Humphrey Gilbert, P.O. Box 704, McLean, Va. 22101

Filed Jan. 24, 1974, Ser. No. 436,184

Int. Cl. B01d 53/14

U.S. Cl. 55—387 19 Claims



1. A gas adsorber cell for use in high efficiency gas cleaning systems and the like and having provision for obtaining a representative and undisturbed sample of the adsorbent material to permit periodic testing of the efficacy of the adsorbent material, said adsorbent cell comprising,

an enclosure including a pair of perforated sheets disposed in spaced apart, parallel relationship, said enclosure being adapted to receive an adsorbent material between said sheets such that a gas may be passed transversely through the sheets and absorbent material,

a sample holder adapted to be filled with an adsorbent material and comprising a perforated top end wall, a perforated bottom end wall, said top and bottom end walls being disposed in spaced apart, parallel relationship with respect to each other, and a peripheral side wall extending between said top and bottom end walls, and

means for removably mounting said sample holder within said enclosure and between said sheets in an operative position wherein said top and bottom end walls of said holder are positioned parallel to said two perforated sheets, whereby a representative portion of the gas passing transversely through the adsorber cell passes through said sample holder, and said holder may be removed to permit the testing of the adsorbent material carried therein.

3,961,921

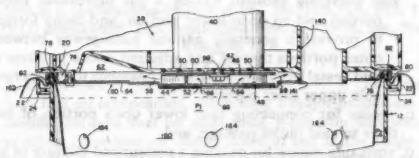
VACUUM CLEANER WITH AN IMPERMEABLE COLLECTOR BAG

Richard I. Heiman, and David R. Hult, both of Columbus, Ind., assignors to Vernco Corporation, Columbus, Ind.

Filed Oct. 15, 1974, Ser. No. 514,587

Int. Cl.² B01D 45/18

U.S. Cl. 55—429 13 Claims



1. A vacuum cleaner including a tank having an interior space for receiving dirt and debris, said tank providing an access opening, a blower assembly including a housing for closing said access opening, said housing providing, within the boundary of said access opening, an intake port for said tank, and said blower assembly including a motor and a blower for drawing air from said tank to create a vacuum therein, and in which the improvement comprises impermeable flexible bag means disposed in and lining said tank, said bag means having a mouth in registry with said access opening such that dirt and debris entering said intake port are deposited into the interior of said bag means, and said bag means also having means for establishing venting between its interior and the space between its exterior and the internal surfaces of said tank to equalize the air pressure within said bag means and tank.

3,961,922

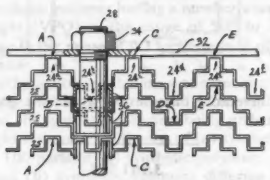
VANE SEPARATOR

Kam Fong Leung, Little Elm, Tex., assignor to Dallas Research Enterprises, Dallas, Tex.

Filed Jan. 2, 1975, Ser. No. 537,927

Int. Cl.² B01D 45/08

U.S. Cl. 55—440 7 Claims



1. Apparatus for separating droplets of liquid from gas flowing through a chamber having an inlet and an outlet comprising: first and second side plates in the chamber; first and second zigzag shaped vane plates; support means in the chamber supporting said first and second zigzag shaped vane plates between said first and second side plates and in spaced apart relation such that a zigzag shaped path is formed between said first and second vane plates, spacer means between said vanes plates, and means urging said vane plates into engagement with said spacer means, said zigzag shaped plates having one end communicating with the inlet of the chamber and another end communicating with the outlet of the chamber, said vane plates having points of inflection intermediate the opposite ends of each of said zigzag-shaped plates; each of said vane plates being shaped to form a series of zigzag shaped vane plate segments intermediate the points of inflection, each of said vane plate segments being shaped to form a series of substantially right angularly disposed surfaces arranged such that surfaces of discontinuity are formed and which define the zigzag shaped path between the points of inflection while forming pockets along each side of said zigzag shaped plates adjacent said surfaces of discontinuity; each of said vane plate segments comprising surfaces extending substantially parallel to said first and second side plates and surfaces disposed perpendicular thereto.

3,961,923

VAPOR-LIQUID SEPARATOR

S. Zia Rouhani, Nykoping, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed July 3, 1974, Ser. No. 485,566

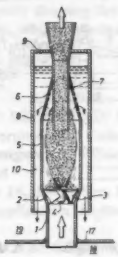
Claims priority, application Sweden, July 16, 1973, 73099491

Int. Cl.² B01D 45/12

U.S. Cl. 55—457 13 Claims

1. A separator for dividing a liquid-vapor mixture, such as a steam-water mixture, into its liquid and vapor components, comprising a vertically extending first pipe arranged to convey the liquid-vapor mixture from a source, a central body positioned within and spaced inwardly from said first pipe and extending in the axial direction of said first pipe, a plurality of vanes located within the extending approximately radially of

said first pipe below the upper end thereof, said vanes arranged in spaced relationship to one another in an annular formation extending between said central body and said first pipe, said vanes arranged to whirl the liquid-vapor mixture within said first pipe as the mixture flows upwardly about said vanes, a vertically extending second pipe located within said first pipe with the lower end thereof spaced upwardly above said vanes and arranged to receive the vapor component of the mixture separated by the whirling action imparted to the mixture by said vanes, said second pipe being substantially co-axial with said first pipe, the upper end of said second pipe extends upwardly from the upper end of said first pipe, wall means laterally enclosing said first pipe and forming an annular outlet chamber therebetween for the separated liquid component and the upward end of said first pipe above the lower end of said second pipe being perforated to flow the separated liquid component into the outlet channel, the upper



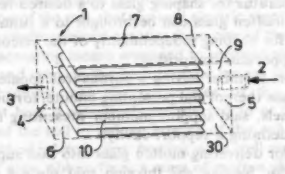
end of said second pipe being located above said wall means wherein the improvement comprises that each of said vanes has an upper edge and a lower edge relative to the vertical direction of said first pipe and an inner edge contacting said central body and an outer edge contacting the inner surface of said first pipe, each of said vanes has a curved cross-section in the axial direction of said first pipe extending from the lower edge to the upper edge thereof with the radius of curvature of each of said vanes increasing from the inner edge thereof to the outer edge thereof, each of said vanes being formed in the shape of a portion of the outer surface of an imaginary cone having a top angle in the range of 50° to 70° with the axis of the cone arranged transversely of the axis of the first pipe and the apex of the cone located inwardly of the inner surface of said first pipe, and the upper edge of said vanes is disposed approximately horizontally and the lower edge of said vanes slopes upwardly in the inward direction.

3,961,924

FILTER DEVICE

Magnus Alskog, Skara, Sweden, assignor to AB Lectrostatic, Skara, Sweden

Filed Feb. 20, 1975, Ser. No. 551,357
Claims priority, application Sweden, Mar. 1, 1974, 7402786
Int. Cl.² B01D *27/06*
U.S. Cl. 55—500 **1 Claim**



1. A self-contained filter assembly including:

a housing having top, bottom, side and end walls formed of cardboard,

an inlet in one end wall of said housing and an outlet in the opposite end wall thereof,

a filter element positioned in said housing in the path of flow of contaminated air and gas through said housing,

said filter element including a filter web of air and gas permeable, particle collecting material such as paper,

said filter web being formed in an accordion-like manner in which adjacent portions of the filter web extend generally parallel to each other and form pockets which alternately open in opposite directions, one set of pockets opening in the direction of flow of air and gas through the filter housing, and

a spacer element installed in each pocket to engage and support adjacent portions of said filter web,

each spacer element including a plurality of elongated ribs extending lengthwise in the direction of flow of air and gas through said housing, said ribs being spaced apart across the width of said housing to form longitudinally extending channels between said ribs to permit air and gas to pass through the spacer element, the outermost ribs on the sides of each spacer element being fastened to the side walls of said housing, and

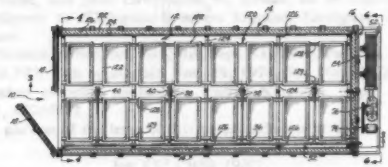
cross bracing extending between said ribs to strengthen the spacer element thereby permitting the spacer element to reinforce said housing to thereby counteract outwardly and inwardly directed forces resulting from the movement of air and gas through said housing during filtering operations, said ribs having sufficient strength to resist bending and to absorb tensile and compressive forces acting in the direction of flow of air and gas through the housing.

3,961,925

REFRIGERATED STORAGE AND TRANSPORTATION CONTAINER FOR PERISHABLE COMMODITIES

John H. Rhoad, P.O. Box 108, Lapush, Wash. 98350

Filed Dec. 16, 1974, Ser. No. 532,833
Int. Cl.² F25D *17/02*
U.S. Cl. 62—376 **14 Claims**



1. A self-contained, refrigerated storage and transportation container for preserving perishable commodities comprising:

a container defining an insulated storage chamber therewithin for accommodating said perishable commodities;

a recirculating liquid cooling system comprising conduit means for a liquid coolant disposed within said storage chamber, nozzle means disposed along said liquid coolant conduit means and adapted to spray said liquid coolant directly onto said perishable commodities to maintain said commodities at a uniform cool temperature, means within said container for delivering said liquid coolant to said liquid coolant conduit means, and recirculating means within said container adapted to withdrawn the sprayed liquid coolant from the bottom portion of said storage chamber and recirculate it back through said liquid cooling system;

the bottom portion of said storage chamber comprising a collection tank having a cover thereover to reduce movement of said liquid coolant in said collection tank during transport of said container, said cover including one-way

valve means allowing coolant to flow into but not out of said collection tank during transport of said container; and

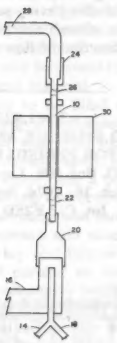
refrigeration means within said container adapted to cool said liquid coolant, said refrigeration means comprising heat exchanger means for a circulating refrigerant disposed within said collection tank and adapted to contact said collected liquid coolant, means for cooling said refrigerant and delivering it to said heat exchanger means, and refrigerant return means adapted to receive said circulated refrigerant from said heat exchanger means and return it to said refrigerant cooling means.

3,961,926

PREPARATION OF GERMANIA CORES IN OPTICAL FIBERS

Adolf R. Asam, Daleville, Va., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Dec. 27, 1974, Ser. No. 536,768
Int. Cl.² C03C *25/02, 15/00*
U.S. Cl. 65—3 A **5 Claims**



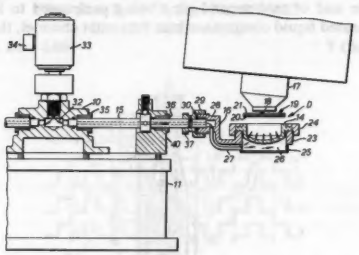
1. A method for forming optical fibers comprising:
supporting a hollow silica tube adjacent a heat source;
depositing a first substantially pure silica layer on the inner surface of said tube;
sealing said tube at one end;
inserting a solid crystalline germanium halide compound into said tube;
sealing the other end of said tube;
heating said tube to vaporize and decompose said compound and coat said silica layer with a layer of germanium;
opening said sealed tube ends;
heating said tube while passing a carrier gas therethrough to remove the halide vapor;
passing oxygen through said tube while further heating to oxidize said germanium and diffuse germania into said silica layer; and heating said tube and layer to collapse into an optical fiber preform.

3,961,927

APPARATUS AND METHOD FOR MOULDING GLASS OBJECTS

John Victor Alderson, Southport; Donald Frederick Stanley, Wigan, and John Duncan Rudd, Newburgh, near Wigan, all of England, assignors to Pilkington Brothers Limited, Liverpool, England

Continuation of Ser. No. 446,000, Feb. 26, 1974, abandoned.
This application July 2, 1975, Ser. No. 592,630
Claims priority, application United Kingdom, Mar. 5, 1973, 10640/73; Mar. 26, 1973, 14490/73; Aug. 8, 1973, 37641/73
Int. Cl.² C03B *11/00*
U.S. Cl. 65—25 R **50 Claims**



1. A method of shaping glass to a desired form in which delivered molten glass can be brought to a suitable viscosity condition for shaping independently of the viscosity of delivery, the method comprising:
feeding gas under pressure through minute, tortuous, gas flow channels of a porous wall of a support member, located at least at the base of the support member, from the reverse side of said wall into a support cavity defined by a cavity surface presented by the support member;
delivering molten glass into the support cavity, while so feeding the gas under a pressure
sufficient to support the glass, while it is in a viscosity condition wherein it can distort or flow, out of contact with the cavity surface on a cushion of gas, but
insufficient to induce perceptible gas stream or blast to blow from the cavity surface so as to push the glass actively away from the cavity surface;
maintaining the glass floating freely in the support cavity on the established gas cushion support of the glass, out of contact with the cavity surface, for a hold time during which
the glass in the support cavity is allowed to assume, under the forces of surface tension, gravity and gas cushion pressure, a shape approximating to that of the support cavity and having a fire-finished glass surface, and
the glass is cooled to a viscosity condition such that it can be further shaped by contact with a solid surface without any substantial surface damage to the fire-finished glass surface formed on the gas cushion; and
shaping the so conditioned glass by a shaping process which involves contact with such a solid surface.

25. Apparatus for shaping glass to a desired form in which delivered molten glass can be brought to a suitable viscosity condition for shaping independently of the viscosity of delivery, the apparatus comprising:
a support member having a porous wall located at least at the base thereof and presenting minute, tortuous, gas flow channels, said support member presenting a cavity surface defining a support cavity;
means for delivering molten glass into said support cavity;
means for feeding gas through said porous wall of said support member, from the reverse side thereof into said support cavity at a pressure

sufficient to support the glass, while it is in a viscosity condition wherein it can distort or flow, out of contact with the cavity surface on a cushion of gas, but

insufficient to induce a perceptible gas stream or blast to blow from the cavity surface so as to push the glass actively away from that cavity surface;

said gas feeding means and said support cavity being cooperable to maintain the glass floating freely in the support cavity on the established gas cushion support of the glass, out of contact with the cavity surface, for a hold time during which

the glass in the support cavity is allowed to assume, under the forces of surface tension, gravity and gas cushion pressure, a shape approximating to that of the support cavity and having a fire-finished glass surface; and

the glass is cooled to a viscosity condition such that it can be further shaped by contact with a solid surface without any substantial surface damage to the fire-finished glass surface formed on the gas cushion; and

means for subsequently shaping the so conditioned glass by a shaping process which involves contact with a solid surface.

3,961,928

DETECTION AND REDUCTION OF ROLL BOWING

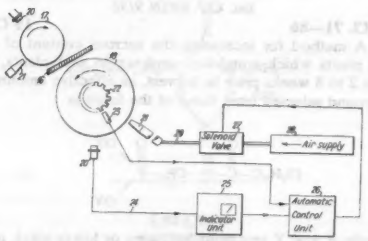
John James Jago, Liverpool, and Colin Billington, Burscough, both of England, assignors to Pilkington Brothers Limited, Merseyside, England

Filed June 16, 1975, Ser. No. 587,497

Claims priority, application United Kingdom, June 21, 1974, 27717/74

Int. Cl.[2] C03B *13/16*

U.S. Cl. 65—29 **17 Claims**



1. Apparatus for detecting and reducing bowing of a rotating roll which is used in contact with hot material, which apparatus comprises a proximity sensor mounted in a fixed position adjacent the surface of a roll or of a member attached thereto, and arranged to generate an electric signal which varies between maximum and minimum limit values during each revolution of the roll in dependence on movement of the surface towards and away from the sensor as the roll rotates, heat transfer means arranged for selectively transferring heat to or from parts of the roll and control means responsive to said electric signal and arranged to control operation of the heat transfer means, said control means comprising a bowing detection circuit arranged to receive said electric signal and provide an operating signal for that period, if any, during any one revolution of the roll, that the said electric signal varies by more than a predetermined amount from one of the said limit values, and actuating means arranged to respond to the operating signal and operate the heat transfer means in predetermined synchronism with the occurrence of the operating signal so that heat is selectively transferred to or from a required part of the roll to reduce bowing of the roll.

17. A method of reducing bowing of a roll used in the formation of glass ribbon from a mass of molten glass, which method comprises sensing variation of the surface position of the roll by a proximity sensor arranged to provide an electric signal varying between maximum and minimum limit values in each revolution with varying position of the roll surface relative to the detector, providing an operating signal if said signal varies by more than a predetermined amount from one of said limit values and using said operating signal to operate heat transfer means in synchronism with the rotation of the roll and selectively heat or cool an appropriate part of the roll to reduce bowing.

3,961,929

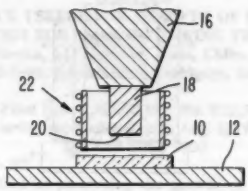
METHOD FOR EMBOSSING A PATTERN IN GLASS

George Fairbank Stockdale, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 24, 1975, Ser. No. 589,854

Int. Cl.[2] C03B *29/00*, *23/00*

U.S. Cl. 65—35 **9 Claims**



1. A method for embossing glass comprising the steps of:

heating the glass to at least the annealing temperature of the glass;

heating a die containing a negative of the pattern to be embossed to a higher temperature than the glass; and

vibrating the die against the surface of glass so as to continually make and break contact between the die and the glass.

3,961,930

MANUFACTURE OF FLAT GLASS

Albert Sidney Robinson, Southport; David Gordon Loukes, Prescot, and Jack Lawrenson, St. Helens, all of England, assignors to Pilkington Brothers Limited, Liverpool, England

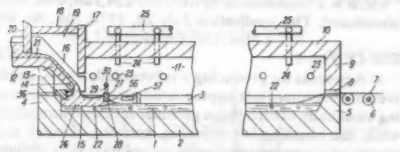
Division of Ser. No. 287,713, Sept. 11, 1972, Pat. No. 3,850,787. This application Nov. 19, 1974, Ser. No. 525,202

Claims priority, application United Kingdom, Sept. 16, 1971, 43269/71

The portion of the term of this patent subsequent to Nov. 6, 1990, has been disclaimed.

Int. Cl.[2] C03B *19/02*

U.S. Cl. 65—99 A **22 Claims**



20. A method of manufacturing flat glass comprising supporting on a surface of molten metal bath contained in a tank structure, an advancing ribbon of glass formed from molten glass flowing through an elongated aperture defined beneath a solid member on to the molten metal bath surface downstream of the solid member, the lower surface of the solid member being wetted by the molten glass and being located at a level slightly above the level of the molten metal surface, and attenuating the advancing ribbon of glass to a desired

thickness by traction applied to the ribbon of glass and acting against reaction provided by wetting of the molten glass on to the solid member.

3,961,931

APPARATUS FOR HEAT-BONDING OPTICAL FIBERS

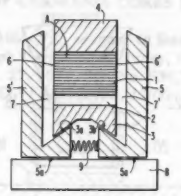
Kenji Nakagawa, Tokorozawa, and Kunimitsu Kobayashi, Yamato, both of Japan, assignors to Hoya Glass Works, Ltd., Tokyo, Japan

Division of Ser. No. 482,681, June 24, 1974, abandoned. This application Feb. 24, 1975, Ser. No. 552,075

Claims priority, application Japan, Sept. 10, 1973, 48-101796

Int. Cl.² C03B *23/20, 9/42*

U.S. Cl. 65—152 **7 Claims**



1. A mold apparatus for heat bonding optical fibers comprising:

An upper press member forming one side wall of said mold;

A lower press member having a plurality of inclined surfaces disposed thereon;

At least one end member forming an end wall of said mold and having a surface capable of sliding inwardly along one of said plurality of inclined surfaces of said lower press member upon the application of pressure from said upper press member; and

At least one side member forming another side surface of said mold and having a surface capable of sliding inwardly along another of said plurality of inclined surfaces of said lower press member upon the application of pressure from said upper press member whereby the side and end walls of said mold uniformly compress the optical fibers contained in the mold along each side and the ends thereof.

3,961,932

PROCESS FOR COATING GRANULAR FERTILIZERS WITH CHELATED MICRONUTRIENTS

Ralph Miller, Pleasantville, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 431,527, Jan. 7, 1974, abandoned, which is a continuation of Ser. No. 224,986, Feb. 9, 1972, abandoned. This application July 22, 1974, Ser. No. 490,825

Int. Cl.² C05G *3/00*

U.S. Cl. 71—1 **3 Claims**

1. A process for producing a substantially dust-free chelated metallic micronutrient impregnated granular fertilizer consisting essentially of blending a granular fertilizer formulation and while the blending is continuing, spraying about 1 to 5% by weight of a concentrated aqueous solution of a chelated metallic micronutrient selected from the group consisting of complexes of synthetic amino acid chelating agents with zinc, copper or manganese metals onto the moving solids to uniformly impregnate the solid granules with said solution, the chelated metallic micronutrient in said solution being non-reactive with any component of the granular fertilizer formulation, and without removing any water and while the blending is continuing adding from about 1 to 4% by weight of a finely divided, water absorbent powder to overcome the detrimental effect of the added water and continuing the blending until said substantially dust-free chelated metallic micronutrient impregnated granular fertilizer formulation is formed, said formulation containing from about 0.05 to 0.5% by weight of micronutrient.

3,961,933

FUNGICIDAL/ALGICIDAL COMPOSITION FOR NON-MEDICAL USES

Hiroshi Kuyama, Urawa, and Nobuyuki Higosaki, Tanashi, both of Japan, assignors to Tokyo Organic Chemical Industries, Inc., Tokyo, Japan

Filed Dec. 19, 1974, Ser. No. 534,519

Claims priority, application Japan, Dec. 22, 1973, 48-493172

Int. Cl.² A01N *11/04*

U.S. Cl. 71—67 **3 Claims**

1. A microbiocidal composition which comprises a microbiocide which consists essentially of a combined effective amount of at least one compound selected from Group A and at least one compound selected from Group B wherein Group A is copper terephthalate and copper isophthalate; and Group B is an inorganic copper salt selected from the group consisting of copper oxychloride, copper chloride, basic copper sulfate, basic copper carbonate, copper silicate, basic copper phosphate and copper hydroxide, the ratio of A:B being from 1:9 to 9:1.

3,961,934

METHOD FOR INCREASING THE SUCROSE CONTENT OF GROWING PLANTS

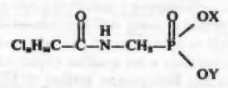
Kenneth Wayne Ratts, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 19, 1974, Ser. No. 534,268

Int. Cl.² A01N *9/36*

U.S. Cl. 71—86 **19 Claims**

1. A method for increasing the sucrose content of sugar cane plants which comprises applying to said plants, from about 2 to 8 weeks prior to harvest, an effective amount of a compound selected from those of the formula



wherein X and Y represent hydrogen or lower alkyl, n is an integer from zero to three, m is an integer from zero to three, and the sum of $m+n$ is three; and certain salts thereof, which salts are selected from the group consisting of alkali metal, ammonium, lower alkyl and lower alkanol amine, aniline and substituted aniline.

3,961,935

SYNERGISTIC HERBICIDAL COMPOSITION COMPRISING O-METHYL OR O-ETHYL-O-(3-METHYL-6-NITROPHENYL)-N-SECONDARY-BUTYLPHOSPHOROTHIOAMIDATE AND A PHENOXY-TYPE HERBICIDE

Takeo Satomi, Nishinomiya, and Naganori Hino, Toyonaka,, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

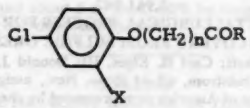
Filed Nov. 9, 1973, Ser. No. 414,574

Claims priority, application Japan, Nov. 10, 1972, 47-113129

Int. Cl.² A01N *9/36*

U.S. Cl. 71—87 **6 Claims**

1. A synergistic herbicidal composition consisting essentially of a herbicidally effective amount of the mixture of O-methyl or O-ethyl-O- (3-methyl-6-nitrophenyl)-N-secondary-butylphosphorothiomidate and a phenoxy-type herbicide represented by the formula:



wherein X represents a chlorine atom or a methyl group, R represents a hydroxy group, *n* is an integer of 1 to 3, said butylphosphorothioamidate being present in an amount of one weight part for 0.1 – 0.5 weight parts of said phenoxy-type compound, and a herbicidally acceptable inert carrier.

3,961,936

HERBICIDAL AGENTS

Kurt Westphal, Wuppertal-Vohwinkel; Werner Meiser, Wuppertal-Elberfeld; Ludwig Eue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

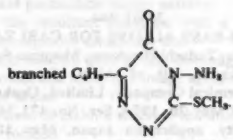
Filed Apr. 12, 1967, Ser. No. 630,225

Claims priority, application Germany, Apr. 16, 1966, 48954

Int. Cl.² A01N *9/22*

U.S. Cl. 71—93 **4 Claims**

1. Herbicidal composition which comprises a mixture of an inert carrier vehicle selected from the group consisting of (1) a solid and (2) a dispersible liquid containing a surface active agent, and a herbicidally effective amount constituting substantially between about 0.001 and 95% by weight of the mixture of a 3-methylthio-4-amino-6-branched butyl-1,2,4-triazine-5-one having the formula



3,961,937

ESTERS OF 1-HYDROXY-1H-IMIDAZO-(4,5-b)-PYRIDINES AS HERBICIDES

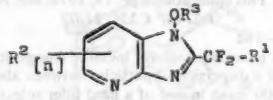
George O. P. O'Doherty, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 236,195, March 20, 1972, Pat. No. 3,818,022, Continuation-in-part of Ser. No. 181,638, Sept. 17, 1971, abandoned, Continuation-in-part of Ser. No. 100,410, Dec. 21, 1970, abandoned. This application Mar. 1, 1974, Ser. No. 447,115

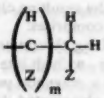
Int. Cl.² A01N *9/22*

U.S. Cl. 71—92 **19 Claims**

1. A method for controlling undesired vegetation which comprises applying to the locus thereof an effective amount of an active agent, said active agent being selected from the group consisting of the compounds of the formula



wherein R^1 represents hydrogen, chlorine, fluorine, difluoromethyl, perfluoroalkyl of C_1–C_6, or radical of the formula:



wherein each Z independently represents hydrogen or halogen and m represents 0 or 1; R^2 represents halogen, nitro, $—CF_3$—, $—CF_2Cl$, $—CF_2H$, or loweralkylsulfonyl of C_1–C_4; and R^3 represents

1. alkyl of C_1–C_6;
2. alkenyl of C_2–C_6;
3. cycloalkyl of C_3–C_6;
4. benzyl; or
5. phenethyl.

3,961,938

SUBSTANCE USEFUL FOR GROWTH OF PLANTS AND PROCESS FOR MANUFACTURING THE SAME

Chiyokichi Iizuka, 121 Shimizu, Noda, Chiba, and Chohachi Fumoto, 2-7-46, Kawarasone, Koshigaya, Saitama, both of Japan

Filed Nov. 8, 1974, Ser. No. 522,249

Claims priority, application Japan, Aug. 2, 1974, 49-88767

Int. Cl.² A01N *9/00*

U.S. Cl. 71—97 **9 Claims**

1. A method of promoting the growth of a plant whose growth is promoted by germanium, comprising applying to the leaves of said plant or to the soil surrounding said plant a growth promoting amount of an organic germanium component obtained by extracting the hyphae of an edible fungus selected from the group consisting of shiitake, nameko and enokidake in combination with a liquid carrier.

3,961,939

3-OXOCYCLOHEX-1-ENYL 2-METHOXY-3,6-DICHLOROBENZOATE, AND HERBICIDAL USE THEREOF

Leonard J. Stach, Riverside, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Feb. 18, 1975, Ser. No. 545,653

Int. Cl.² C07C *69/76*; A01N *9/30*

U.S. Cl. 71—107 **3 Claims**

1. The compound 3-oxocyclohex-1-enyl 2-methoxy-3,6-dichlorobenzoate.

3,961,940

POST-TREATMENT OF ILMENITE ORE SUBJECTED TO SELECTIVE CHLORINATION TREATMENT

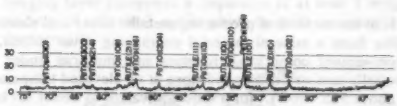
Seitaro Fukushima; Ariyoshi Saito, and Fukuzo Kaneko, all of Omiya, Japan, assignors to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha, Japan

Filed Nov. 15, 1974, Ser. No. 524,340

Claims priority, application Japan, Nov. 20, 1973, 48-130468

Int. Cl.² C22B *1/00*; C01G *23/00*

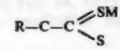
U.S. Cl. 75—1 T **10 Claims**



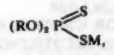
1. In a process for upgrading an ilmenite ore containing gangue materials to produce an artificial rutile comprising chlorinating the ilmenite ore in the presence of a solid carbonaceous material whereby the larger part of the iron value in the ilmenite ore is selectively chlorinated into chlorides thereof which are evaporated off during the chlorination under conditions which leave the titanium value in the ilmen-

ite ore unchlorinated in the resulting chlorinated ilmenite ore, the improvement which comprises:

1. subjecting said resulting chlorinated ilmenite ore to magnetic separation in a high-intensity magnetic field, thereby to separate a magnetic portion and a non-magnetic portion of the chlorinated ilmenite ore, and then
2. subjecting the non-magnetic portion to flotation with the use of a frothing agent, and a collector selected from the group consisting of xanthates represented by the general formula



and dithiophosphates represented by the general formula



wherein R is an alkyl group containing 2 to 5 carbon atoms and M is a member selected from the group consisting of sodium, potassium and allyl, thereby to separate the residual of the solid carbonaceous material concentrated in the non-magnetic portion and a part of the gangue materials liberated from the ilmenite ore, and to obtain an artificial rutile of high titanium content as a tailing portion from the flotation.

3,961,941

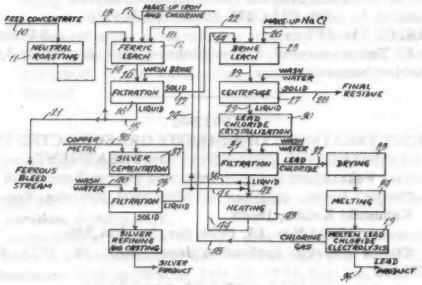
METHOD OF PRODUCING METALLIC LEAD AND SILVER FROM THEIR SULFIDES

Richard D. Baker, Osburn, Idaho; Stephen M. Cottam, Bountiful, Utah; Howard E. Day, Silverton, and William A. Griffith, Osburn, both of Idaho, assignors to Hecla Mining Company, Wallace, Idaho

Filed May 19, 1975, Ser. No. 578,745

Int. Cl.² C22B *1/02, 11/04, 13/04*

U.S. Cl. 75—101 R **12 Claims**



1. In the method of producing metallic silver and elemental sulfur from a mineral material comprising silver sulfide, the improvement comprising: roasting said material under substantially non-oxidizing conditions at an elevated temperature of about 525°–900°C. for a time equivalent to about 1.5 hours at about 550°–600°C. to produce a roasted product; first leaching said roasted product in an aqueous water soluble ferric salt solution containing ferric ions to produce the corresponding solid silver salt and elemental sulfur; subjecting said solid silver salt to a second leach with aqueous sodium chloride brine solution to produce the corresponding soluble silver chloride dissolved in the solution and a solid residue comprising said elemental sulfur; and separating said dissolved silver salt from said elemental sulfur.

3,961,942

HYDROMETALLURGICAL PROCESS FOR COPPER RECOVERY FROM SULFIDE ORES

Philip R. Haskett; Carl H. Elges, III; Donald J. Bauer, and Roald E. Lindstrom, all of Reno, Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation-in-part of Ser. No. 413,408, Nov. 6, 1973, abandoned. This application Mar. 19, 1975, Ser. No. 559,942

Int. Cl.² C22B *15/00*

U.S. Cl. 75—101 BE **9 Claims**

1. A process for the recovery of copper from sulfide ores or concentrates comprising leaching the ore or concentrate in a concentrated caustic solution with an oxidizing gas at a pressure of from about 80 to about 200 psig, and at a temperature of from about 25° to about 200°C, whereby the dissolution of copper from the ore or concentrate is effected.

3,961,943

PROCESS FOR RECOVERING PALLADIUM

Joseph G. Schell, Jr., Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 18, 1975, Ser. No. 569,628

Int. Cl.² C22B *11/04*

U.S. Cl. 75—108 **10 Claims**

1. A method of converting an inactive palladium-containing complex, formed during the process of making an alkylene glycol monoester from a carboxylic acid and an olefin, to metallic palladium, said method comprising reducing at least a portion of said palladium-containing complex to metallic palladium by adding hydrazine or hydrogen to a slurry of said palladium-containing complex and an alkylene glycol ester.

3,961,944

ALUMINUM-BASE ALLOYS FOR CABLE-SHEATH

Kiyomi Yanagida; Tadashi Hirokane; Megumu Sumitomo, and Hidenori Takaoka, all of Aichi, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 20, 1974, Ser. No. 471,745

Claims priority, application Japan, May 18, 1973, 48-56610; May 18, 1973, 48-56111

Int. Cl.² C22C *21/00*

U.S. Cl. 75—138 **18 Claims**

1. A cable-sheath material comprising an aluminum-base alloy consisting essentially of aluminum and at least one of less than about 1.7% by weight Mn and less than about 0.8% by weight Cr in the ranges defined by the two equations

$$3.8 \times \text{Cr-content (wt.\%)} + 3.0 \times \text{Mn-content (wt.\%)} \leq 5.1$$

$$3.8 \times \text{Cr-content (wt.\%)} + 3.0 \times \text{Mn-content (wt.\%)} \geq 0.35$$

and 0.05 to 0.45% by weight Li.

3,961,945

ALUMINUM-SILICON COMPOSITE

Robert N. Sanders, Baton Rouge, La., and Alex R. Valdo, Phoenix, Ariz., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 219,523, Jan. 20, 1972, abandoned. This application Apr. 19, 1974, Ser. No. 462,312

Int. Cl.² C22C *21/02*

U.S. Cl. 75—142 **4 Claims**

1. A hard generally uniform metallic composite consisting essentially of a dispersion of particles between about 60 mesh and about 400 mesh in size of a hard filler selected from the group consisting of zircon, alumina, zirconia and aluminum silicates, the dispersion being in an aluminum-silicon alloy containing by weight 19 to 21% silicon, 4 to 8% magnesium and 2 to 4% copper, the balance of the alloy being essentially

aluminum, and about 5 to about 80% by weight of the composite being the dispersed particles.

3,961,946
MAGNETIC ALLOY FOR USE IN THERMO AND MAGNETO PRINTING

Yoshimi Makino, Fujisawa, and Shigeyasu Ito, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 6, 1975, Ser. No. 547,542
Claims priority, application Japan, Feb. 13, 1974, 49-17458
Int. Cl.[2] C22C *5/04*
U.S. Cl. 75—172 R **1 Claim**

1. Magnetic alloy for use in thermo and magneto printing, containing platinum, nickel and cobalt, as represented $Pt_x(Ni_yCo_{1-y})_{1-x}$ where x being not less than 0.45 and not more than 0.55, y being not less than 0.65 and not more than 0.86.

3,961,947
PROCESS FOR PREPARING WATERLESS LITHOGRAPHIC MASTERS

John B. Wells, Savannah, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 19, 1973, Ser. No. 408,222
Int. Cl.[2] G03F *7/02*
U.S. Cl. 96—1 R **28 Claims**

1. A method of preparing a waterless lithographic master comprising:
   a. providing a suitable ink accepting substrate,
   b. coating said substrate with a silicone gum curing catalyst,
   c. depositing a barrier fusible hydrophobic particulate image pattern on said coated substrate to mask said curing catalyst in the image areas,
   d. fusing said particulate image pattern,
   e. coating the resultant substrate with a curable silicone gum as an aqueous emulsion; and
   f. curing said silicone gum in the nonimage areas to selectively provide ink receptive image areas and ink releasing nonimage areas.

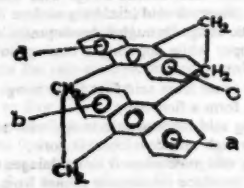
25. The method of claim 1 wherein the image is electrophotographically formed.

3,961,948
PHOTOCHROMIC IMAGING METHOD

Franklin D. Saeva, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

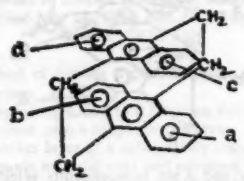
Continuation of Ser. No. 323,589, Jan. 15, 1974. This application Aug. 2, 1974, Ser. No. 494,246
Int. Cl.[2] G03C *13/00*; B41M *5/18*; G03C *5/24*; G03G *16/00*
U.S. Cl. 96—1 R **35 Claims**

8. An imaging method based upon the visible light induced differences with respect to the relative physical properties, chemical properties or electrical properties of a photochromic compound and its corresponding photoisomer, said method comprising:
   a. providing a photochromic imaging member wherein the imaging layer comprises a dispersion of at least 1 weight percent of at least 1 cyclic photochromic compound of the formula:



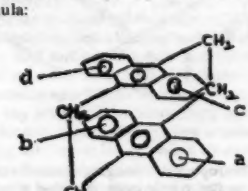
wherein *a*, *b*, *c* and *d* are independently selected from the group consisting of hydrogen, halogen, NO_2, NH_2, lower alkyl, phenyl, phenoxy, lower alkoxy, carboxy, hydroxyl, lower alkyl esters and aryl esters
in a film-forming polymeric resin;
   b. forming a latent image within said imaging layer by imagewise exposure of said imaging layer to sufficient visible light to convert the photochromic compound(s) to its (their) corresponding photoisomer(s); and
   c. rendering said latent image visible by charging the surface of the imaging layer followed by contacting said charged surface with a charged colored powder, the relative polarity of the surface charge and the charge on the colored powder causing the attraction of said powder to those areas of the imaging layer capable of retention of the surface charge.

15. An imaging method based upon the visible light induced differences with respect to the relative physical properties, chemical properties or electrical properties of a photochromic compound and its corresponding photoisomer, said method comprising:
   a. providing a photochromic imaging member wherein the imaging layer comprises a dispersion of at least 1 weight percent of at least 1 cyclic photochromic compound of the formula:



wherein *a*, *b*, *c* and *d* are independently selected from the group consisting of hydrogen, halogen, NO_2, NH_2, lower alkyl, phenyl, phenoxy, lower alkoxy, carboxy, hydroxyl, lower alkyl esters and aryl esters
in a film-forming polymeric resin;
   b. forming a latent image within said imaging layer by imagewise exposure of said imaging layer to sufficient visible light to convert the photochromic compound(s) to its (their) corresponding photoisomer(s); and
   c. rendering said latent image visible by (*i*) heating of the surface of the imaging layer to a point just above its glass transition temperature thereby rendering the surface of the imaging layer adhesive in imagewise configuration, (ii) contacting said adhesive image with the surface of a donor member, said surface being coated with loosely adhering colored particles, and (*iii*) separating said donor member and said imaging layer, whereby colored particles are transferred to the adhesive areas of said imaging layer from the surface of said donor member.

22. An imaging method based upon the visible light induced differences with respect to the relative physical properties, chemical properties or electrical properties of a photochromic compound and its corresponding photoisomer, said method comprising:
   a. providing a photochromic imaging member wherein the imaging layer comprises a dispersion of at least 1 weight percent of at least 1 cyclic photochromic compound of the formula:



wherein *a*, *b*, *c* and *d* are independently selected from the

group consisting of hydrogen, halogen, NO_2, NH_2, lower alkyl, phenyl, phenoxy, lower alkoxy, carboxy, hydroxyl, lower alkyl esters and aryl esters
in a film-forming polymeric resin;

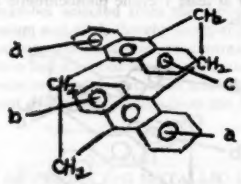
b. uniformly frosting the imaging layer;

c. forming a latent image within said imaging layer by imagewise exposure of said imaging layer to sufficient visible corresponding photoisomer(s); and

d. rendering said latent image visible by exposing the frosted surface of the imaging layer to solvent vapors whereby the unexposed surface of the film reverts to its former smooth condition.

29. An imaging method based upon the visible light induced differences with respect to the relative physical properties, chemical; properties or electrical properties of a photochromic compound and its corresponding photoisomer, said method comprising:

a. providing a photochromic imaging member wherein the imaging layer comprises a dispersion of at least 1 weight percent of at least 1 cyclic photochromic compound of the formula:



wherein *a*, *b*, *c* and *d* are independently selected from the group consisting of hydrogen, halogen, NO_2, NH_2, lower alkyl, phenyl, phenoxy, lower alkoxy, carboxy, hydroxyl, lower alkyl esters and aryl esters
in a film-forming polymeric resin;

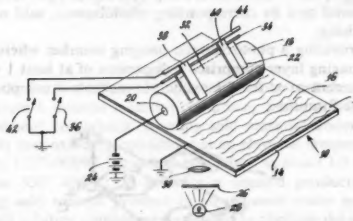
b. forming a latent image within said imaging layer by imagewise exposure of said imaging layer to sufficient visible light to convert the photochromic compound(s) to its (their) corresponding photoisomer(s); and

c. rendering said latent image visible by exposing the surface of the imaging layer to solvent vapors whereby the polymeric resin of said imaging layer is crystallized in the exposed areas of the imaging layer.

3,961,949
PHOTOELECTROPHORETIC IMAGING METHOD PRODUCING A DESIRED IMAGE BORDER

Henry R. Till, and Percy Keith Watson, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1972, Ser. No. 214,936
Int. Cl.² G03G *17/04*
U.S. Cl. 96—1 PE **3 Claims**



1. A photoelectrophoretic imaging method comprising

a. providing a flat transparent injecting electrode and a cylindrically shaped blocking electrode,

b. providing a layer of imaging suspension on the surface of said injecting electrode, said suspension comprising a plurality of finely divided particles in an electrically insulating carrier liquid, each of said particles comprising an electrically photosensitive pigment;

c. bringing said blocking electrode into rolling virtual contact with said injecting electrode and establishing an electrical field across said suspension layer;

d. exposing said suspension to an imagewise pattern of activating electromagnetic radiation through said transparent injecting electrode; and

e. substantially reducing the electrical field across said suspension in predetermined areas outside of and bordering the image area by contacting the areas of said blocking electrode surface corresponding to said border areas with a conductive member biased to a potential which substantially reduces the electrical field in said border areas, wherein the particles in said suspension do not adhere to the surface of either electrode in said border areas,

whereby complementary images having clearly defined borders are formed on the surfaces of said electrodes.

3,961,950
IMAGING SYSTEM

Richard F. Bergen, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 10, 1975, Ser. No. 540,299
Int. Cl.² G03G *16/00*
U.S. Cl. 96—1.1 **21 Claims**

1. A method of obtaining a reverse sense image from an original comprising:

a. providing an unscreened electro-optic image recorder;

b. exposing said recorder to activating radiation through a grating pattern, thereby forming surface deformations on said recorder corresponding to said grating pattern; then,

c. exposing said recorder to an imagewise pattern of activating radiation corresponding to the original image, thereby forming an image in said recorder which, when the higher order diffracted light is viewed, is opposite in sense to the original.

4. The method of claim 1 wherein said recorder is reflection type image recorder, and further including a reflection type readout system for projecting the image information on said recorder onto a viewing plane.

16. The method of claim 13 wherein said image recorder comprises a layer of voltage or current-sensitive, light modulating material overlying a layer of photoconductive material.

3,961,951
ELECTROPHOTOGRAPHIC METHOD FOR PRODUCING MULTIPLE COPIES FROM THE SAME ELECTROSTATIC IMAGE

Edward F. Mayer, Acton, Mass., and Robert A. Moore, Nashua, N.H., assignors to Itek Corporation, Lexington, Mass.

Filed Dec. 26, 1974, Ser. No. 536,712
Int. Cl.² G03G *13/14*
U.S. Cl. 96—1.4 **10 Claims**

1. In an electrophotographic method including the steps of:

Forming an electrostatic image on an insulating surface;

Developing said electrostatic image with toner to form a first toner image on said insulating surface by passing the electrostatic image through a development zone containing developer while applying a biasing potential thereacross;

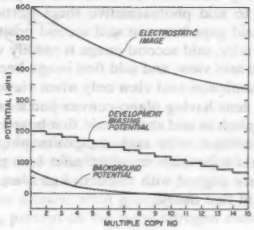
Transferring toner from said first toner image to a support surface to form a first copy;

Redeveloping said electrostatic image with toner by recycling it through said development zone;

Transferring said redeveloped toner images to a support surface to produce subsequent copies from said electrostatic image;

The improvement comprising reducing the applied biasing potential on successive cycles of said electrostatic image

through said development zone to thereby offset reductions in said electrostatic image potential which produces



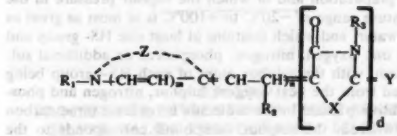
subsequent electrophotographic copies having good image density.

3,961,952
MEROCYANINE PHOTOCONDUCTORS

Robert H. Sprague, Carlisle, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed June 4, 1973, Ser. No. 366,907
Int. Cl.² G03G 5/04
U.S. Cl. 96—1.5 **12 Claims**

1. An electrophotographic element comprising an electrically conducting support material with a photoconductive coating thereon, said photoconductive coating consisting essentially of a photoconductive merocyanine dye pigment dispersed in an insulating binder with a pigment to binder ratio of from about 2/1 to about 1/4, wherein said merocyanine dye can be represented by the following structural formula:



wherein:

R_1 is alkyl, unsaturated alkyl, hydroxyalkyl, alkoxyalkyl, acyloxyalkyl, carboxyalkyl, cycloalkyl, aryl, aralkyl or, heterocyclic;

Z represents the non-metallic atoms completing a 5 or 6 member heterocyclic ring;

m is equal to 0 or 1;

R_2 is hydrogen, alkyl, aryl or aralkyl;

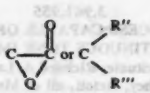
n is equal to 0, 1, 2, 3 or 4;

R_3 is hydrogen, lower alkyl or hydroxyalkyl;

X is O, Se, S or N—R′ wherein R′ is a monovalent alkyl or aryl group; and,

d is equal to 1, 2, 3 or 4;

Y represents



wherein Q represents the non-metallic atoms necessary to complete a heterocyclic ring and wherein R″ and R‴ are individually selected from CN, COR and COOR where R is alkyl, aryl or aralkyl.

3,961,953
METHOD OF FABRICATING COMPOSITE TRIGONAL SELENIUM PHOTORECEPTOR

Richard P. Millonzi, and Richard W. Radler, both of Marion, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 28, 1974, Ser. No. 473,858
Int. Cl.² G03G 5/04
U.S. Cl. 96—1.5 **4 Claims**

1. A method of making a photosensitive imaging device which comprises:

vacuum depositing a 0.03 to 0.8 micron thick layer of vitreous selenium onto a supporting substrate, forming a relatively thicker layer of a substantially transparent electrically organic material over said selenium layer and heating said device to a temperature of from 125° to 210°C for a time of from 1 to 24 hours to convert the vitreous selenium to the crystalline trigonal form.

3,961,954
ACID SENSITIZED CHARGE TRANSFER COMPLEXES AND CYCLIC ELECTROSTATOGRAPHIC IMAGING

Gustav R. Pfister, Webster; David J. Williams, Fairport, and Martin A. Abkowitz, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 27, 1972, Ser. No. 319,080
Int. Cl.² G03G 5/09, 13/14
U.S. Cl. 96—1.6 **5 Claims**

1. A cyclic electrostatographic imaging method comprising:

a. providing an imaging member having a photoconductive imaging layer containing an organic photoconductive material, an activator capable of formation of a charge transfer complex with said material and from about 0.01 to less than about 0.1 weight percent of an organic protonic acid having an aqueous dissociation constant of 10^{-4} or greater;

b. forming a latent electrostatic image on the surface of said imaging layer by first charging said surface followed by exposing said surface to a light and shadow image, the extent of exposure being sufficient to generate nonpersistent photocurrents in the irradiated areas of said layer without any substantial corresponding generation of persistent photocurrents in these same irradiated areas;

c. rendering said latent image visible by development with finely divided toner particles;

d. removing at least a portion of at least any residual developed image from said imaging surface; and

e. repeating steps a-d in sequence at least one additional time.

3,961,955

PRINTING PROCESS CAPABLE OF REPRODUCING CONTINUOUS TONE IMAGES

Robert F. Gracia, Scituate; Richard A. Laughrey, Marblehead, and Paul F. Tuohey, Acton, all of Mass., assignors to Itek Corporation, Lexington, Mass.

Continuation-in-part of Ser. Nos. 54,626, July 13, 1970, Pat. No. 3,809,562, and Ser. No. 54,627, July 13, 1970, Pat. No. 3,807,304, and Ser. No. 55,238, July 13, 1970, Pat. No. 3,807,305, and Ser. No. 174,102, Aug. 23, 1971, which is a continuation-in-part of Ser. No. 54,626, July 13, 1970, Pat. No. 3,809,562, and Ser. No. 54,627, July 13, 1970, Pat. No. 3,807,304, and Ser. No. 55,238, July 13, 1970, Pat. No. 3,807,305, and Ser. No. 862,912, Oct. 1, 1969, abandoned, said Ser. No. 54,626, and Ser. No. 54,627, and Ser. No. 55,238, each is a continuation-in-part of Ser. No. 74,467, July 15, 1969, abandoned. This application July 23, 1973, Ser. No. 381,836

The portion of the term of this patent subsequent to Nov. 27, 1990, has been disclaimed.

Int. Cl.[2] G03F *7/02*; B41M *1/00*, *5/00*

U.S. Cl. 96—33 **10 Claims**

1. Process of recording a continuous tone image comprising:

a. forming a continuous tone physically developable image on a physically roughened support and

b. physically developing by contacting said medium with image forming materials comprising a source of metal ions external to the photosensitive layer and wherein the thickness of the physically developable image, the roughness of the support, the proximity of the physically developable image with respect to the surface of the support, and the length of contacting of said medium with said image forming materials being such as to selectively deposit sufficient metal to thereby form a coherent metal image of low contrast and having an extended tonal range and which is adherently bonded and in intimate contact with said support.

3,961,956

METHOD FOR PRODUCTION OF AND DISTINCTION BETWEEN COMBINED VALIDIFICATION AND IDENTIFICATION PHOTOGRAPHS

Susumu Fukuda, and Kuniomi Abe, both of Nishinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 388,861, Aug. 15, 1973. This application May 15, 1975, Ser. No. 578,053

Claims priority, application Japan, Oct. 25, 1972, 47-106782; Sept. 26, 1972, 47-96364

Int. Cl.[2] G03C *9/00*, *5/04*

U.S. Cl. 96—40 **4 Claims**

1. A method of making an identification image in the form of a compositive photograph containing at least two different images, one of which is a holder image and the other of which is a check image, with the holder image not being clearly discernible when viewed normally because the check image dominates the view, which method comprises:

projecting a first holder image on a sheet of photosensitive material through a first board formed of a plurality of slats disposed parallel to one another at an even pitch and separated by gaps, said gaps being less wide than the slats and being no greater than 45 mm in width, with said slats being approximately at least twice as wide as the width of said gap, with said board being positioned in close contact with said photosensitive sheet, whereby, only said photosensitive sheet portions defined by said gaps of said first board are initially exposed, and

projecting a second check image on said photosensitive sheet through a second board, which is positioned in close contact with said photosensitive sheet, with said second board slats being at least as wide as said gaps of said first board and lying over the previously exposed portions of said photosensitive sheet and having gaps between said second board slats which are at least twice as wide as the gaps of said first board and being aligned with unexposed portions thereof, whereby, only said photosensitive sheet portions defined by said gaps between said second board slats are exposed to form a compositive photograph containing said first and second images, said first image being contained in thin striate portions corresponding to said photosensitive sheet portions exposed through gaps between said first positioned board slats, and said second image being contained in thin, straite portions corresponding to said photosensitive sheet portions exposed through said gaps between said second positioned board slats, whereby, said second image is readily viewable and dominates said view, and said first image becomes apparent and dominates said view only when viewed through a lenticular lens having plano-convex portions disposed at the same pitch as said slats of said first board when placed in close contact with said composite photograph and moved into a position in which said lens plano-convex portions are aligned with respective striate portions containing said first image.

3,961,957

DYE BLEACH PREPARATION FOR THE PHOTOGRAPHIC SILVER DYE BLEACH PROCESS

Ekkehard Kramp; John Lenoir; Max Marthaler, all of Marly, and Robert Schaller, Fribourg, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed May 10, 1974, Ser. No. 468,838

Claims priority, application Switzerland, May 18, 1973, 7124/73

Int. Cl.[2] G03C *7/00*

U.S. Cl. 96—53 **16 Claims**

1. Dye bleach preparation for the photographic silver dye bleach process which comprises an acid, a water-soluble iodide and at least one organic, at least bifunctional sulphur compound of which the solubility is at least 5×10^{-4} mol per liter of preparation and of which the vapour pressure in the temperature range of −20°C to +100°C is at most as great as that of water, and which contains at least one HS- group and at least one oxygen, nitrogen, phosphorus or additional sulphur atom, with the sulphur atom of each HS—group being separated from the next oxygen, sulphur, nitrogen and phosphorus atom present in the molecule by at least three carbon atoms, wherein the sulphur compound corresponds to the formula

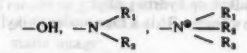
$$H-S-A(-B)_m$$

wherein

A denotes an aliphatic, araliphatic, aromatic or heterocyclic bridge member,

m denotes an integer of value at most 4 and

B denotes are of the groups of the formulae



$X^{\ominus}$, —COOM,

$-SO_3M$,

and

wherein

M denotes a cation,

X denotes an anion,

R_1 and R_2 denote a hydrogen atom, a lower alkyl group, a lower hydroxyalkyl group or the radical of a benzenesulphonic acid and

R_3 denotes a lower alkyl group and

R_1 and R_2 present on the same nitrogen atom can also form a heterocyclic ring with the latter.

3,961,958

PROCESS FOR FIXING PHOTOGRAPHIC MATERIAL

Matthias Schellenberg, Marly, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 9, 1974, Ser. No. 513,449

Claims priority, application Switzerland, Oct. 18, 1973, 14756/73

Int. Cl.² G03C *5/38*

U.S. Cl. 96—61 R **6 Claims**

1. Process for fixing imagewise exposed and developed photographic material, containing silver iodide, with an aqueous fixing bath which contains at least one compound capable of forming soluble silver complexes and selected from the group consisting of thiocyanates and thiosulphates, which process comprises employing a fixing bath that contains at least one of the following solvents: N-methylpyrrolidone, ε-caprolactam, tetramethylurea, phosphoric acid trisdimethylamide, N-methylmorpholine, dimethylformamide, glycol monomethyl ether, dimethylsulphone, dimethylsulphoxide, acetonitrile.

3,961,959

PROCESS FOR DEVELOPING A LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Mitsuto Fujiwhara; Keiji Kasai; Yoshinobu Nakagawa; Hiroshi Tokura; Kenji Itoh, and Seiji Muramoto, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

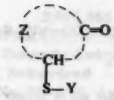
Filed Jan. 28, 1974, Ser. No. 436,868

Claims priority, application Japan, Feb. 5, 1973, 48-13811

Int. Cl.² G03C *5/30, 7/00, 1/06*

U.S. Cl. 96—66.3 **21 Claims**

1. A process for developing an imagewise exposed light-sensitive silver halide protographic material in the presence of a development releasing inhibitor compound which liberates a development inhibitor and simultaneously produces a colourless compound, said development releasing inhibitor compound comprising



wherein Z represents a group selected from the group consisting of a piperidone, a lactone having a 4- to 7-membered ring, a pyrrolidone, a hydantoin and an oxyindole, and Y represents a group that forms a development inhibitor when the sulphur atom of the thioether bond is split from the heterocyclic ring to release an aryl mercapto compound, a heterocyclic mercapto compound, a thioglycol, cysteine or glutathione.

3,961,960

MULTILAYER COLOR PHOTOGRAPHIC MATERIALS

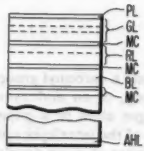
Keisuke Shiba; Takeshi Hirose; Jun Hayashi; Atsuaki Arai; Nobuo Furutachi, and Harumi Katsuyama, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed June 19, 1974, Ser. No. 480,802

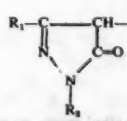
Claims priority, application Japan, June 19, 1973, 48-68892

Int. Cl.² G03C *1/76, 7/04, 1/40*

U.S. Cl. 96—74 **11 Claims**

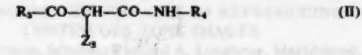


1. A multilayer color photographic material comprising a support having coated thereon at least two photosensitive silver halide emulsion layer units which provide dye images having substantially different colors from each other by color development, each of said photosensitive emulsion layer units containing a coupler (A) capable of undergoing a coupling reaction with the oxidation product of a primary aromatic amine color developing agent and an interlayer color correction coupler (B) capable of providing an interlayer interimage effect, which provides a dye having a different color than that of the dye formed by the coupling reaction of said coupler (A) and the oxidation product of the primary aromatic amine color developing agent, wherein in said photosensitive emulsion layer units the dye images provided by said coupler (A) and said coupler (B) are of the same type, said couplers (A) and said interlayer color correction couplers (B) being couplers represented by the following general formula (I)



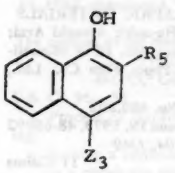
(I)

wherein R_1 represents an alkyl group, an aryl group, an alkoxy group, an aryloxy group, a heterocyclic ring, an amino group, a carbonamido group, or a ureido group; R_2 represents an alkyl group, an aryl group, or a heterocyclic group; and Z_1 represents a hydrogen atom or a group which is released or releases, in the case of the interlayer color correction coupler, a development inhibitor at color development; the general formula (II)



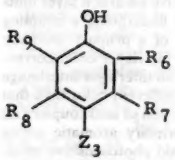
(II)

wherein R_3 represents an alkyl group or an aryl group; R_4 represents an aryl group; and Z_2 represents an hydrogen atom or a group which is released or releases, in the case of the interlayer color correction coupler, a development inhibitor at color development; the general formula (III)



(III)

wherein R_5 represents a carbonyl group, a sulfamyl group, an alkoxycarbonyl group, or an aryloxycarbonyl group; and Z_3 represents a hydrogen atom or a group which is released or releases in the case of the interlayer color correction coupler, a development inhibitor at color development; or the general formula (IV)



(IV)

wherein R_6 represents an alkyl group, an aryl group, a heterocyclic group, an amino group, a carbonamido group, a sulfonamido group, a sulfamyl group, or a carbamyl group; R_7, R_8, and R_9 each represents a hydrogen atom, an alkoxy group, an alkyl group, an aryl group, a heterocyclic group, an amino group, a carbonamido group, a sulfonamido group, a sulfamyl group, or a carbamyl group; and Z_3 represents a hydrogen atom or a group which is released or releases, in the case of the interlayer color correction coupler, a development inhibitor at color development.

3,961,961

POSITIVE OR NEGATIVE DEVELOPABLE PHOTOSENSITIVE COMPOSITION

Larry D. Rich, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

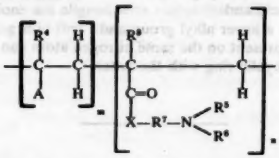
Filed Nov. 20, 1972, Ser. No. 308,121

Int. Cl.[2] G03C 1/68

U.S. Cl. 96—83 10 Claims

1. An article comprising a substrate having thereover a light-sensitive layer comprising:

1. at least one free-radical polymerizable monomer having at least one terminal vinyl group and a boiling point above 100°C., said monomer being free of acidic and basic moieties,
2. at least one photoinitiator in an amount sufficient to polymerize said polymerizable monomer upon exposure to actinic radiation, and
3. a blend comprising:
   a. at least one acid soluble amino containing polymer of the formula



wherein R^4 is hydrogen or methyl; A is selected from the class consisting of hydrogen, alkyl having up to 18 carbon atoms, vinyl, isopropenyl, phenyl, alkoxy having up to 18 carbon atoms, alkoxycarbonyl having up to 18 carbon atoms, carboalkoxy having up to 18 carbon atoms, tetrahydrofurloxycarbonyl, carbamoyl, N,N-di(lower alkyl) carbamoyl, pyrrolidinyl, and cyano groups; R^5 and R^6 are each selected from the class consisting of hydrogen, lower alkyl, and phenyl groups and R^5 and R^6 together with the N may be a piperidino or morpholino group; R^7 is selected from divalent alkylene having 2 to 18 carbon atoms and phenylene groups; R^8 is hydrogen or lower alkyl group; X is oxygen or N-R^9 wherein R^9 is hydrogen or a lower alkyl group; *m* is zero or a positive integer; and *n* is a positive integer; and

   b. at least one compatible, acid insoluble, film-forming polymer,

said free radical polymerizable monomer and said components of said blend being present in an amount sufficient to allow said composition upon imagewise actinic radiation exposure to be developed positively and negatively as desired.

3,961,962

PHOTOMASK MATERIAL AND METHOD FOR PRODUCING SAME

Masamichi Sato, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Nov. 29, 1974, Ser. No. 528,317

Claims priority, application Japan, Nov. 29, 1973, 48-134784

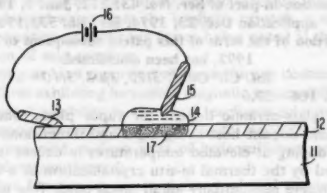
Int. Cl.[2] G03C 1/78

U.S. Cl. 96—87 R 10 Claims

1. A photomask material which comprises a transparent support having thereon an aluminum oxide thin film formed by anodic oxidation, said oxide thin film containing with a uniform distribution over the entire film a number of fine pores having a light-sensitive silver halide therein.

6. A method for producing the photomask material of claim 1, which comprises providing an aluminum thin layer on a transparent support, anodically oxidizing said aluminum thin layer by contacting said aluminum thin layer with an electrolytic solution such that the rate of anodic oxidation of said aluminum thin layer is continuously reduced in a direction of from one portion of said thin layer to another portion of said

thin layer to thereby render said thin layer transparent, and incorporating a light-sensitive silver halide in a number of the



resulting fine pores formed in the aluminum oxide thin film and uniformly all over the aluminum oxide thin film.

3,961,963

MULTILAYER PHOTOGRAPHIC MATERIAL

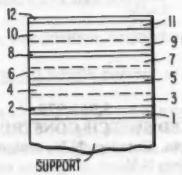
Keisuke Shiba; Takeshi Hirose, and Toshiaki Aono, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sept. 13, 1974, Ser. No. 505,816

Claims priority, application Japan, Sept. 13, 1973, 48-103542

Int. Cl.² G03C *1/40*

U.S. Cl. 96—100 **13 Claims**



1. A photographic photosensitive material comprising a support having thereon a silver halide photosensitive emulsion layer containing a hydroquinone derivative which releases a development inhibitor at development and including on said emulsion layer or between said emulsion layer and said support an adsorbing colloid layer containing silver halide particles which are not substantially developed by development for adsorbing said development inhibitor.

3,961,964

COATING COMPOSITION FOR SUPPRESSING COMBUSTION OF TITANIUM METAL

Meyer R. Achter, Washington, D.C., and James R. Griffith, Riverdale Heights, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 24, 1973, Ser. No. 406,074

Int. Cl.² C09D *5/14*

U.S. Cl. 106—15 FP **5 Claims**

1. A coating composition for suppressing combustion of titanium metal comprising from about 14.8% by weight to about 73.7% by weight N,N-diglycidyl-2,4,6-tribromoaniline, from about 13.2% by weight to about 31.2% by weight a solution of cyclopentene ether-2,3,2',3' diepoxide in the diglycidyl ether of bisphenol A, a curing agent, and a solvent.

3,961,965

DYESTUFF PREPARATIONS AND PRINTING INKS

Guenther Zwahlen, Dornach, Switzerland, assignor to Sublistatic Holding SA, Switzerland

Division of Ser. No. 354,978, April 27, 1973, Pat. No. 3,854,969, which is a continuation of Ser. No. 99,678, Dec. 8, 1970, abandoned, which is a continuation-in-part of Ser. No. 743,287, July 9, 1968, abandoned. This application July 18, 1974, Ser. No. 489,826

Claims priority, application Switzerland, July 24, 1967, 10436/67; Nov. 2, 1967, 15343/67

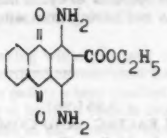
The portion of the term of this patent subsequent to Dec. 17, 1991, has been disclaimed.

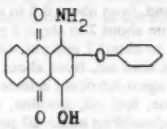
Int. Cl.² C09D *11/14*

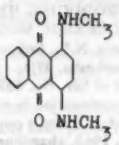
U.S. Cl. 106—22 **10 Claims**

1. An intaglio printing ink which contains:

1. the dyestuff of formula







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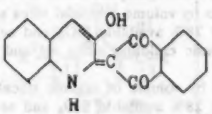


2. an aqueous-organic or substantially pure organic solvent or mixture thereof; and

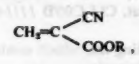
3. at least one resinous cellulose derivative which disolves readily in (2), and which serves as binder or thickener for the printing ink.

3,961,966
CYANOACRYLATE ADHESIVES

Bernd Brinkmann, Bad Zwischenahn, and Wolfgang Imoehl, Unna, both of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed Sept. 27, 1974, Ser. No. 509,827
Claims priority, application Germany, Oct. 4, 1973, 2349799
Int. Cl.² C07C 121/38; C07D 305/10; C09J 3/00; C09K 3/14
U.S. Cl. 106—36 6 Claims

1. An adhesive composition comprising an ester of α-cyanacrylic acid of the formula



wherein R is hydrocarbon having 1 to 10 carbon atoms, plasticized by the presence in said composition of 5 to 50 percent by weight of a monocyclic or bi-cyclic lactone having from 3 to 20 carbon atoms and having from 4 to 7 members in the lactone ring.

3,961,967
FOUNDRY FACING SAND COMPOSITION

Thomas Aaron Brooks, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed Apr. 10, 1974, Ser. No. 459,782
Int. Cl.² B28B 7/36
U.S. Cl. 106—38.23 8 Claims

1. A foundry facing green sand mold composition consisting essentially of silica sand and admixed therewith, in percent by weight of the silica sand, from about 0.8 to about 2 percent of a cellulose binder, from about 2 to about 6 percent of foundry clay, from about 3.5 to about 7 percent water, from about 1 to about 2.2 percent core oil, from about 0.3 to about 0.5 percent of a release agent-lubricant selected from the group consisting of kerosene, fuel oil, gasoline, and silicone base materials, and from about 0 to about 20 percent silica flour.

3,961,968
METHOD FOR PRODUCING HYBRID BINDER FOR CERAMIC MOLDS

Wayne F. Wales, Elnora, N.Y., assignor to Waukesha Foundry Company, Inc., Waukesha, Wis.

Continuation-in-part of Ser. No. 455,687, March 28, 1974, abandoned, and a continuation-in-part of Ser. No. 76,609, Sept. 29, 1970, abandoned, and a continuation-in-part of Ser. No. 841,117, July 11, 1969, abandoned. This application Mar. 17, 1975, Ser. No. 559,191
Int. Cl.² B28B 7/34; B01J 13/00
U.S. Cl. 106—38.35 12 Claims

1. The method of preparing a hybrid silicate binder comprising the steps of admixing the following:

a. 30–60 parts by volume glycol ether having the formula $C_nH(2n + 1) OCH_2CH_2OH$ where $n = 1, 2, 3$ or 4;

b. 30–75 parts by volume colloidal silica sol comprising at least about 28% available SiO_2 and selected from the group of basic colloidal silica sol and acidic colloidal silica sol;

c. 5–25 parts by volume of organic silicate comprising at least about 28% available SiO_2 and selected from the group of ethyl silicate, ethylene glycol monoethyl ether silicate, propyl silicate and butyl silicate, said organic silicate being hydrolyzed with 1-2% water and containing sufficient acid to provide final binder pH of 1–4;

d. The volume and composition of the constituents added pursuant to b. and c. being chosen so that the ratio of % SiO_2 by weight contributed by the c. constituents to the % SiO_2 by weight contributed by the b. constituents to the final binder is between 0.09 and .9.

3,961,969
GLASS-CERAMICS FOR SEMICONDUCTOR DOPING

James E. Rapp, Oregon, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 431,212, Jan. 7, 1974. This application Dec. 23, 1974, Ser. No. 535,170
The portion of the term of this patent subsequent to Sept. 23, 1992, has been disclaimed.
Int. Cl.² C03C 3/22, 3/08, 3/10
U.S. Cl. 106—39.6 4 Claims

1. A glass-ceramic dopant for vapor phase transport of B_2O_3, said dopant host being rigid and dimensionally stable during doping at elevated temperatures in excess of 1050°C prepared by the thermal in-situ crystallization of a thermally crystallizable substantially alkali metal oxide free glass composition consisting essentially of:

Component	Mole %
SiO_2	15–40
Al_2O_3	15–30
B_2O_3	20–60
RO	5–25

wherein

$$4 \geq \frac{Al_2O_3}{RO} \geq 1.5$$

Wherein RO is:

MgO	0–15
CaO	0–10
SrO	0–10
BaO	0–15
La_2O_3	0–5
Nb_2O_5	0–5
Ta_2O_5	0–5

3,961,970
REED SWITCH CONSTRUCTION

David W. Morgan, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 21, 1975, Ser. No. 570,250
Int. Cl.² C03C 3/04, 3/10
U.S. Cl. 106—52 1 Claim

1. A glass having a strain point between about 420°–450°C., a coefficient of thermal expansion (25°–300°C.) in the range of 100–120 × 10^{-7}/°C., an electrical resistivity, Log R, of at least 8.5 as measured at 250°C. and at least 6.5 when measured at 350°C., and being composed essentially of, in percent by weight as calculated from the glass batch on an oxide basis, 53–59% SiO_2, 3–7% Al_2O_3, 20–25% $Na_2O + K_2O$ with a K_2O:Na_2O ratio greater than 1.1 on a weight basis, 7–10% BaO, 2–6% ZnO, and 1–5% Fe_2O_3.

3,961,971
METHOD FOR IMPROVING BRIGHTNESS OF KAOLINITE CLAYS INCLUDING IRON PYRITES

William F. Abercrombie, Jr.; Frank R. Trowbridge, and Norman Lary McCook, all of Macon, Ga., assignors to J. M. Huber Corporation, Locust, N.J.

Continuation-in-part of Ser. No. 362,155, May 21, 1973, Pat. No. 3,853,983. This application Dec. 9, 1974, Ser. No. 531,027
The portion of the term of this patent subsequent to Dec. 10, 1991, has been disclaimed.
Int. Cl.² C04B 33/13
U.S. Cl. 106—72 5 Claims

1. A method for preparing a brightened coating kaolin from a crude kaolinitic clay, discolored with contaminants including discoloring iron-based contaminants in the form of iron pyrites and sulfurous contaminants, comprising:

subjecting said crude clay to comminution; k

roasting said comminuted crude clay in an oxidizing atmosphere at a temperature from 400°C to 600°C for a period of about 2 hours, said temperature being sufficient to oxidize the pyrites but insufficient to drive off the chemically bound water from the kaolinite crystals, a substantial cessation of sulfurous fumes being noted at the completion of said roasting;

converting at least a portion of the sulfurous contaminants to a form exhibiting increased magnetic susceptibility and increased solubility in chemical leachants selected from the group consisting of zinc dithionite, zinc salts of hydrosulfurous acid, sodium salts of hydrosulfurous acid and combinations thereof;

thereafter forming an aqueous slurry of said roasted clay, said slurry being of about 40% solids;

subjecting at least a portion of said slurry to a magnetic field having an intensity of at least 2.4 kilogauss and high field gradients for a period of about four minutes to separate at least part of said converted components; and

thereafter subjecting said slurry to leaching employing from 0.1 to 2.5 weight percent of leach selected from the group consisting of zinc dithionite, zinc salts of hydrosulfurous acid, sodium salts of hydrosulfurous acid and combinations thereof and to filtration.

3,961,972
HIGH STRENGTH SILICATE FORM AND METHOD FOR PRODUCING SAME

Derry D. Sparlin, and Charles M. Starks, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Apr. 9, 1975, Ser. No. 566,550
Int. Cl.² C04B *35/16*
U.S. Cl. 106—75 **17 Claims**

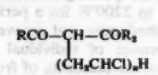
1. A silicate foam composition having improved strength which comprises:

a. from about 80 to 90 weight percent of an alkali metal silicate;

b. from about 10 to 15 weight percent of a cementing agent;

c. from about 1.5 to 2.5 weight percent of a filler;

d. from about 0.5 to 1.5 weight percent of a vinyl chloride telomer having an average molecular weight in the range of from about 600 to about 1,000 and represented by the generic formula:



wherein R and R_3 are alkyl radicals containing from 1 to about 20 carbon atoms, aromatic radicals containing about 6 to 10 carbon atoms, and alkyl substituted aromatic radicals wherein the alkyl constituent contains from 1 to about 6 carbon atoms and wherein the aromatic moiety contains from about 6 to 10 carbon atoms, and n has an average value of from about 3 to 13; and

e. from about 0.5 to 1.0 weight percent of a gelling agent.

3,961,973
LIGHTWEIGHT AGGREGATE

Dennis A. Jones, Vandalia, Ohio, assignor to Amax Resource Recovery Systems, Inc., Dayton, Ohio

Filed July 19, 1974, Ser. No. 489,905
Int. Cl.² C04B *7/02*
U.S. Cl. 106—98 **7 Claims**

1. A lightweight concrete product having as its major ingredients a pozzolanic material including primarily Portland cement; sand; and a lightweight inorganic non-reactive aggregate formed of dry bottom ash, said major ingredients having the following approximate proportions:

pozzolanic material	- 8 to 20 per cent
sand	- 10 to 50 per cent
aggregate	- remainder

said bottom ash aggregate consisting of dry bottom ash essentially as formed as the waste by-product of burning pulverized coal in a dry bottom furnace, said dry bottom ash containing no more than 5 per cent sulfur trioxide and less than 1 per cent iron pyrite by weight.

3,961,974
METHOD OF MANUFACTURE OF IMPROVED WHITE PORTLAND CEMENT

Stewart W. Tresouthick, North Township, Lake County, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 15, 1975, Ser. No. 568,335
Int. Cl.² C04B *7/08*
U.S. Cl. 106—101 **3 Claims**

1. Method of making white portland cement comprising forming dry white portland cement meal into generally pillow-shaped briquettes or pellets whose smallest dimension is from ¼ to ¾ inch having at least 40 pounds crushing strength and no more than 5% loss in the standard tumbler abrasion test, and whose largest dimension is no more than about three times the smallest dimension, passing the briquettes through a rotary kiln having a pyroprocessing zone reaching a temperature of 2700°F to 2800°F and quenching the briquettes to reduce their temperature from a kiln temperature of from about 2000°F or higher to a quench temperature of less than 1000°F in a period of from 5 seconds to 5 minutes in the presence of a reducing fluid or in the absence of oxygen.

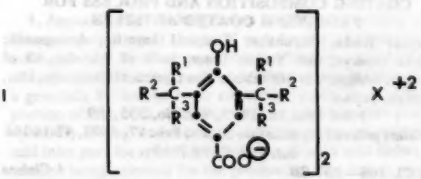
3,961,975
TITANIUM DIOXIDE PIGMENTED CELLULOSIC POLYMER COMPOSITIONS WITH IMPROVED VISIBLE AND ULTRAVIOLET LIGHT STABILITY

Joseph S. Zannucci, and Gerald R. Lappin, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 7, 1975, Ser. No. 539,193
Int. Cl.² C08L *1/08, 1/14*
U.S. Cl. 106—176 **8 Claims**

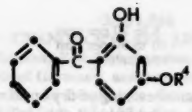
1. Composition comprising a titanium dioxide-pigmented cellulosic polymer normally susceptible to degradation due to visible or ultraviolet light mixed with a stabilizing amount of the following components (I) and (II):

I. a compound having the formula

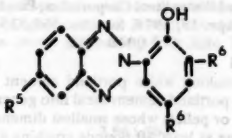


wherein R^1 to R^3 are the same or different and each represents an alkyl radical having 1 to 8 carbon atoms; X^{+2} is Mn^{+2} or Zn^{+2}; and

II. a compound selected from (a) compounds having the formula:

II 

or (b) compounds of the formula:

III 

wherein R^4 represents hydrogen or an alkyl radical, R^5 represents hydrogen or chloro, each R^6 is the same or different and represents hydrogen or an alkyl radical, each of said components being utilized in an amount of from about 0.01 to about 4.0 weight percent based on the weight of the polymer with an upper limit such that the sum of all such percentages of said components does not exceed 5 weight percent based on the weight of the polymer.

3,961,976

METHOD OF PREPARING SIZE

Alf Hugo Karlsson, Njurunda, Sweden, assignor to SCA Development Aktiebolag, Sundsvall, Sweden

Filed Apr. 25, 1975, Ser. No. 571,645
Claims priority, application Sweden, May 17, 1974, 7406630
Int. Cl.² C08L 1/28
U.S. Cl. 106—186 10 Claims

1. A method of preparing fuse size which comprises combining carboxymethyl cellulose and urea, heating said combination, and adding an oxidizing agent to said heated combination in the presence of a metal ion, said metal ion having at least two oxidation stages and being in the lower of said two oxidation stages.

3,961,977

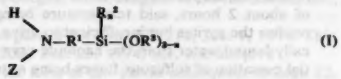
COATING COMPOSITION AND PROCESS FOR PRODUCING COATED ARTICLES

Hiroyuki Koda, Toyonaka; Toshiaki Izumita, Amagasaki; Shiro Gomyo, and Yoshio Inoue, both of Annaka, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Feb. 16, 1973, Ser. No. 333,189
Claims priority, application Japan, Feb. 17, 1972, 47-16044
Int. Cl.² C07F 7/10
U.S. Cl. 106—287 SB 4 Claims

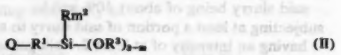
1. A coating composition for applying on a surface of a thermoplastic resin-molded article and forming a transparent coating layer having scratch resistance and antistatic properties, which comprises:

A. a partially-hydrolyzed carbon-functional silane derived from a carbon-functional silane selected from the group consisting of (*a*) a mixture of from 20 to 70 parts by weight of an aminoalkylalkoxysilane represented by a formula (I)



(I)

wherein R^1 stands for a divalent hydrocarbon group having 1 to 4 carbon atoms, R^2 and R^3 designate a monovalent hydrocarbon radical having 1 to 4 carbon atoms, z stands for a hydrogen atom or an aminoalkyl group, and n is 0 or 1, and from 80 to 30 parts by weight of an epoxyalkylalkoxysilane represented by a formula (II)



(II)

wherein R^1, R^2 and R^3 are as defined above, Q designates a glycidoxy or epoxycyclohexyl group, and *m* is 0 or 1 and (*b*) a reaction product thereof, which is obtained by effecting said carbon-functional silane with water in an amount of 10% to 40% of the amount calculated stoichiometrically to hydrolyze said carbon-functional silane into the corresponding silanol, and

B. an organic solvent which may dissolve said partially-hydrolyzed carbon-functional silane without swelling or dissolving of said thermoplastic resin-molded article.

3,961,978

PROCESS FOR PRODUCING PERLITE MICROSPHERES

Franz J. Brodmann, Philadelphia, Pa., assignor to General Refractories Company, Bala Cynwyd, Pa.

Filed Sept. 20, 1974, Ser. No. 507,702
Int. Cl.² C09C 1/28; C04B 31/22
U.S. Cl. 106—288 B 3 Claims

1. The method of preparing hole-free microspheres of perlitic material comprising reducing said material to a particle size less than about 200 mesh, separating the reduced material into at least one fraction within the size range of from about less than 200 mesh to about less than 325 mesh, and a fraction of more than about 325 mesh, agglomerating the latter fraction with sodium lignosulfonate binder to an aggregate size of less than about 200 mesh, expanding said fractions at a temperature of about 1800° to 2200°F. for a period of about 30 to 60 seconds in a fluidized state and recovering a product comprising a preponderance of individual perlite microspheres having a diameter on the order of from about 10 to about 200 microns and a wall thickness of from about 0.7 to about 1.5 microns.

3,961,979

METHOD FOR CONTROLLING THE VISCOSITY OF DISPERSED CLAY SLURRIES

William F. Abercrombie, Jr., Macon, Ga., assignor to J. M. Huber Corporation, Locust, N.J.

Filed June 17, 1974, Ser. No. 479,714
Int. Cl.² C09C 1/42
U.S. Cl. 106—308 N 5 Claims

1. A method for controlling and maintaining the viscosity of aqueous slurries of finely divided daolin pigments, comprising the steps of refining kaolin clay particulates in an aqueous medium to reduce partical size and improve brightness and contacting the refined kaolin clay particulates in said aqueous medium, having a clay solids content in the range of from about 60 to 72% by weight, with the pentasodium salt of diethylenetriamine pentacetic acid in an amount in the range of from about 0.1 to 5.0 pounds acid per ton of said clay particulates, based on the dry weight of said clay particulates.

3,961,980

PRODUCTION OF POWDERED SUCROSE:DEXTROSE BLENDS

Bryant R. Dunshee, St. Paul, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Aug. 5, 1974, Ser. No. 494,675
Int. Cl.² A23G 3/00; C13K 13/00
U.S. Cl. 127—30 5 Claims

1. A process for preparing a powdered sugar blend which comprises simultaneously grinding dextrose monohydrate and granular sucrose in a weight ratio, respectively, of about 1:99 to 50:50 to yield the blend wherein no more than about 1.5% of the particles thereof are retained on a U.S. No. 200 Standard Screen.

3,961,981

REFINING OF SUGAR CONTAINING LIQUIDS BY ION EXCHANGE

Frank Xavier Pollio, Union City, N.J., and Omar Campos, Campinas, Brazil, assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 384,991, Aug. 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 303,461, Nov. 3, 1972, abandoned. This application Aug. 22, 1974, Ser. No. 499,707
Int. Cl.² C13D 3/14; B01J 1/04
U.S. Cl. 127—46 A 13 Claims

1. In a process for decolorizing and deionizing a sugar containing liquid in which the liquid is passed through a bed of a weakly basic anion exchange resin in the bicarbonate form, so as to convert the salts present in the solution to their corresponding bicarbonates and to remove a large portion of the color bodies present therein, the improvement which comprises contacting the liquid containing the bicarbonate salts under pressure of 2 to 10 atmospheres with a strong acid sulfonic cation exchange resin in the calcium form thereby exchanging the non-calcium metal cations in the liquid with the calcium from the resin, and then deashing the liquid by converting the soluble calcium bicarbonate to form an insoluble, predominantly calcium carbonate precipitate, and then separating the clarified and decolorized sugar solution.

3,961,982

METHOD OF REMOVING SILVER IMAGES FROM ALUMINUM LITHOGRAPHIC PLATES

Eugene J. DeLorenzo, Acton, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Jan. 4, 1974, Ser. No. 431,007
Int. Cl.² C23G 1/12
U.S. Cl. 134—3 6 Claims

1. In the method of transforming portions of an oleophilic coherent silver image containing between about 1 and about 12 grams of silver per square meter and bonded to a grained metal surface of an aluminum lithographic plate substrate having a metal oxide barrier layer thereon into hydrophilic areas by contacting said portions with a deletion fluid, the improvement wherein said deletion fluid comprises an aqueous nitric acid solution containing from about 35% to about 70% by volume nitric acid and a finely divided inert metal oxide thickening agent present in an amount sufficient to provide said deletion fluid with a viscosity of at least about 500 centipoises.

3,961,983

APPARATUS AND METHOD FOR WASHING INTERIORS OF TRUCK AND TRAILER BODIES

Clyde O. Crandall, Pleasanton, and Charles Delbert Douglas, Oceanside, both of Calif., assignors to Safeway Stores, Incorporated, Oakland, Calif.

Filed Dec. 23, 1974, Ser. No. 535,287
Int. Cl.² B60S 1/00
U.S. Cl. 134—8 13 Claims

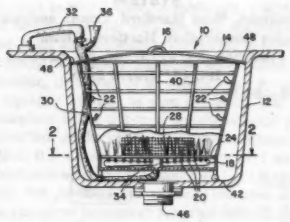
1. In a system for washing the interior of a truck or trailer body, the combination of a fixed base, an elongate horizontal boom mounted on the base, a washer head mounted on one end of the boom for entry into said interior, spray means on the washer head for directing washing fluid against said interior, brush-like scrubbing means on the washer head for contacting and scrubbing said interior, means for moving the washer head with said end of the boom along a horizontal axis into and out of the interior, and control means for actuating said spray means and scrubbing means when the washer head is within the interior.

3,961,984

SPACE SAVER DISHWASHER

Albert F. Torressen, Bronx, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Jan. 30, 1975, Ser. No. 545,330
Int. Cl.² B08B 3/02
U.S. Cl. 134—100 2 Claims

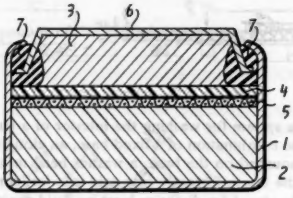


1. Apparatus for washing dishes in a sink comprising: a rack for placement in said sink, said rack having a bottom portion configured for standing on an interior bottom wall of the bowl of said sink and a top portion configured for holding dishes; a generally horizontal rotor rotatably carried by said bottom portion of said rack, said rotor having a central inlet port and upwardly facing water nozzles in fluid communication with said inlet port for spraying water upward onto said dishes, said nozzles being oriented for the production of a rotary reaction force upon said rotor; a conduit having means at one end for coupling to a faucet of said sink, the other end of said conduit coupled to said rotor inlet port; a cover for mounting over the top portion of said rack, said cover being configured for peripheral sealing engagement with the sidewalls of said sink; and an aperture in said cover for passage of said conduit therethrough.

3,961,985
NICKEL-ZINC CELL

Tsutomu Takamura, Kawasaki; Tamotsu Shirogami, Yamato, and Yoshimi Kanada, Tokorozawa, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 346,450, March 30, 1973, abandoned. This application Dec. 24, 1974, Ser. No. 536,153
Claims priority, application Japan, Mar. 10, 1973, 48-27603
Int. Cl.² H01M 4/04
U.S. Cl. 136—28 9 Claims

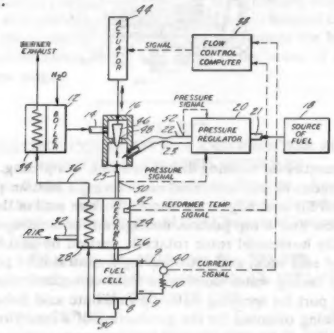


1. A nickel-zinc cell comprising a compressed positive nickel electrode composition in the bottom of a cell, a negative zinc electrode composition on top of said positive electrode composition and an alkaline electrode and a separator disposed between said positive and negative electrode compositions, the positive nickel electrode composition comprising an electron conducting material, a positive electrode material comprising 100 parts by weight nickel oxide and 40 to 60 parts by weight manganese dioxide, and a binding material, whereby the capacity of said nickel-zinc cell is increased under heavy current discharge loads and the capacity loss of said nickel-zinc cell is reduced during storage of the cell.

3,961,986
METHOD AND APPARATUS FOR CONTROLLING THE FUEL FLOW TO A STEAM REFORMER IN A FUEL CELL SYSTEM

Elliot I. Waldman, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 20, 1975, Ser. No. 633,993
Int. Cl.² H01M 8/06
U.S. Cl. 136—86 B 7 Claims



1. In a fuel cell system having a fuel cell with fuel reforming apparatus upstream of said fuel cell, said apparatus including a steam reformer, and an ejector upstream of the reforming apparatus, the method of regulating the feed flow to the reforming apparatus comprising:

introducing steam into the ejector as the primary flow thereof;

introducing a gaseous fuel into the ejector as the secondary flow thereof for mixing with the steam therein;

controlling the rate of fuel flow into the ejector by

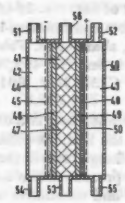
1. controlling the rate of steam flow into the ejector;
2. trimming the fuel flow to the ejector using passive trim means in the conduit carrying the fuel to the ejector; and
3. increasing and decreasing the pressure of the fuel supplied to the trim means by amounts equivalent to increases and decreases in the ejector back pressure; and

conveying the mixture of fuel and steam from the ejector into the fuel reforming apparatus.

3,961,987
ELECTRO-CATALYST AND PROCESS OF MANUFACTURE

Konrad Mund, and Rolf Schulte, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 23, 1974, Ser. No. 472,699
Claims priority, application Germany, June 1, 1973, 2328050
Int. Cl.² H01M 27/04
U.S. Cl. 136—86 D 10 Claims

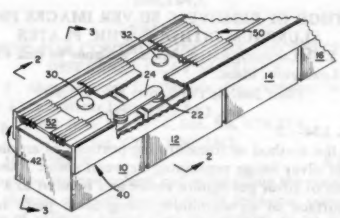


1. An electrocatalyst comprising at least one compound with semiconductor characteristics consisting of a metal of the iron group of the periodic table of elements and two different elements selected from the group consisting of phosphorous, arsenic, antimony, bismuth, tellurium and sulfur or selenium.

3,961,988
BATTERY COVER

Gerald F. Andreoff, 13208 Fleta Drive, La Mirada, Calif. 90638

Filed Apr. 28, 1975, Ser. No. 572,118
Int. Cl.² H01M 10/02
U.S. Cl. 136—181 8 Claims



1. The improvement in a cover for a bank of electrical batteries for covering the terminals thereof comprising:

a pair of elongated L-shaped angular members which conform at least in part at their angular portions to the edges of a series of batteries placed in alignment with each other;

a bridging member joined between said angular members across the top of said batteries; and,

means to join said bridging member to said L-shaped angular members in the form of an elongated longitudinal edge on one of said members and an elongated channel on the other member having a space for receiving the elongated edge therein.

3,961,989

METHOD OF MAKING IMPATT DIODE AND RESULTING DIODE

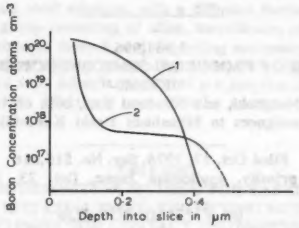
Christopher John Heslop, Pinner, England, assignor to The Post Office, London, England

Filed Feb. 4, 1975, Ser. No. 547,013

Claims priority, application United Kingdom, Feb. 8, 1974, 5865/74

Int. Cl.² H01L *21/263*

U.S. Cl. 148—1.5 **6 Claims**



1. A method of making an IMPATT diode comprising the steps of:

a. doping an n-type epitaxial layer of silicon grown on an n^+-type silicon substance with boron; and then

b. bombarding said layer with ions while maintaining its temperature between 590°C and 610°C.

3,961,990

MANUFACTURE OF MAGNETIC MATERIALS WHICH EXHIBIT EXCHANGE ANISOTROPY

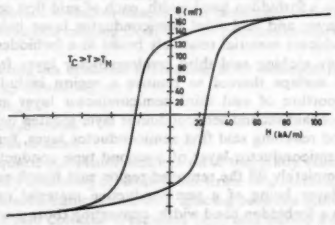
Eberhard Koester, Frankenthal; Gerd Wunsch, Speyer; Paul Deigner, Weisenheim; Karl Uhl, Frankenthal; Werner Stumpfl, Ludwigshafen, and Werner Steck, Mutterstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Dec. 23, 1974, Ser. No. 535,578

Claims priority, application Germany, Dec. 29, 1973, 2365178

Int. Cl.² H01F *1/06*

U.S. Cl. 148—6.3 **5 Claims**



1. A process for the manufacture of magnetic pigments exhibiting exchange anisotropy and consisting essentially of two-phase magnetic single-domain particles with the alloy $[Co_xNi_{1-x}]$ as a ferromagnetic phase A and its oxidized form $[(CoO)_x(NiO)_{1-x}]$ as an antiferromagnetic phase B, x being from 0.04 to 0.96, which comprises:

heating said alloy $[Co_xNi_{1-x}]$ in particulate form at temperatures up to 450°C in the presence of gaseous nitrous oxide (N_2O) to oxidize the surface of the particles to a depth of from 40 to 1000A to the antiferromagnetic phase $B[(CoO)_x(NiO)_{1-x}]$.

3,961,991

METHOD FOR CHEMICAL TREATMENT OF THE SURFACE OF AN IRON SUBSTRATE WITH PHOSPHORIC ACID SOLUTIONS

Yuichi Yoshida, Ageo, and Akio Takagi, Yokohama, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Nov. 21, 1973, Ser. No. 417,759

Claims priority, application Japan, Nov. 22, 1972, 47-117378

Int. Cl.² C23F *7/10*

U.S. Cl. 148—6.15 R **14 Claims**

1. A method for the chemical treatment of the surface on an iron substrate to render the surface especially suitable for a subsequent painting step which consists essentially of the step of (a) treating the surface with an aqueous solution which consists essentially of phosphoric acid in a concentration of 0.5 to 80 weight/volume percent, followed by the step of (b) subjecting the surface without water rinsing to treatment with an aqueous solution consisting essentially of phosphoric acid and a substance (A) capable of reacting with the phosphoric acid to give a water-soluble salt, which salt is then hydrolyzed and/or reacted with the iron substrate to form a volatile base, said substance (A) being selected from the group consisting of ammonia, ammonium hydroxide, hydroxylamine, tetraalkylammonium hydroxide of which the alkyl group has not more than 2 carbon atoms, an alkylamine of which the alkyl group has not more than 2 carbon atoms, a dialkylamine of which the alkyl group has not more than 2 carbon atoms, or a trialkylamine of which the alkyl group has not more than 2 carbon atoms or a substance (B) capable of reacting with the phosphoric acid to give a water-soluble salt, which salt is then hydrolyzed and/or reacted with the iron substrate to form a non-volatile base, said substance (B) being selected from the group consisting of an alkali metal, an alkali metal oxide or an alkali hydroxide, or mixtures of substances (A) and (B), the pH of the aqueous solution in step (b) being 1 to 9, the total ion concentration being 0.2 to 8 weight/volume percent and the concentration of the cation from the substance (B) being not more than 0.5 weight/volume percent, said aqueous solution of phosphoric acid and substance (A) or (B) being reused continuously for treating the surfaces of iron substrates in subsequent chemical treatment steps as defined above.

3,961,992

METHOD OF TREATING METAL SURFACES

Richard William Jahnke, Mentor-On-The-Lake, and Russell Lee Swaney, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Cleveland, Ohio

Filed Oct. 3, 1974, Ser. No. 511,546

Int. Cl.² C23F *11/00*, *7/08*

U.S. Cl. 148—6.15 R **12 Claims**

1. A method of rinsing a phosphated metal article which comprises contacting the surface of said phosphated article with a dilute solution consisting essentially of a solvent and the product obtained by reacting a hydroxyaromatic compound with formaldehyde under alkaline conditions, the mole ratio of said formaldehyde to said hydroxyaromatic compound being at least about 2:1.

3,961,993

COATED METAL ARTICLE AND METHOD OF COATING

Stephen P. Palisin, Jr., Cleveland, Ohio, assignor to The Empire Plating Company

Continuation-in-part of Ser. No. 200,224, Nov. 18, 1971, Pat. No. 3,790,355, which is a continuation of Ser. No. 887,397, Dec. 22, 1969, abandoned. This application Nov. 21, 1973, Ser. No. 418,114

Int. Cl.² C23F 7/10, 7/12, 7/26, 7/14

U.S. Cl. 148—6.16 10 Claims

1. A method of protecting a metallic surface to render it highly resistant to salt spray corrosion and to abrasion, wherein the surface is composed of a metal selected from the group of metals consisting of aluminum, iron, zinc, brass and copper alloys, comprising the steps of:

a. phosphating the surface in a phosphate coating bath;

b. chromating the phosphate surface to produce a clear, blemish-free colorless chromate coating thereon by treating it for between about 15 seconds and about 25 seconds with water containing between about 6 ounces and about 16 ounces per gallon of a liquid composed of about 90% CrO_3 and about 10% sodium bisulfate;

c. rinsing the chromated surface with water to flush away chromating solution remaining thereon;

d. coating the chromated surface with a transparent colorless hydrophobic thermosetting polymer; and,

e. heating the article to above about 300° F. to convert the polymer to a hard, colorless transparent film thereby providing a surface with a blemish-free corrosion resistant finish.

3,961,994

MANUFACTURE OF GRINDING MEMBERS OF FERROUS ALLOYS

Michel Thome, Paris, France, assignor to Acieries Thome Cromback, Paris, France

Filed May 3, 1974, Ser. No. 466,884

Claims priority, application France, May 4, 1973, 73.16163

Int. Cl.² C21D 7/14

U.S. Cl. 148—12 R 16 Claims

1. A method for the manufacture of forged grinding members from white cast iron having a high chromium content, the structure of which is composed of a solid martensitic or austenitic solution containing secondary chromium carbides and primary or eutectic chromium carbides of the M_7C_3 type, which are finely divided and distributed in a homogeneous manner, said method comprising heating at a temperature of 1000° to 1120°C a bar of white cast iron consisting essentially of 1.5% to 3% weight carbon, 8 to 25% by weight chromium, 0 to 2% by weight molybdenum and the remainder iron, cutting said bar into pieces at said temperature, forging said pieces at a second temperature of 1000° to 1070°C and hardening the forged pieces to obtain a solid martensitic or austenitic solution containing chromium carbides exclusively of the M_7C_3 type and with exclusion of cementite carbides of M_3C type.

3,961,995

MOTHER ALLOY OF ALUMINUM, TITANIUM AND BORON AND PROCESS FOR FABRICATION

Maurice Alliot, Modane, France; Jean-Claude Beguin, Brussels, Belgium; Michel Moutach, Vizille, and Jean-Claude Percheron, Chedde, both of France, assignors to Aluminum Pechiney, Lyon, France

Filed Apr. 1, 1974, Ser. No. 456,672

Claims priority, application Luxemburg, Apr. 4, 1973, 67355

Int. Cl.² C22C 21/00

U.S. Cl. 148—32 7 Claims

1. An aluminum-titanium-boron mother alloy consisting essentially of a boron content of 0.2 to 0.8% by weight and a titanium content such that Ti − 2.2 B 3.9%, balance aluminum, wherein the aluminum matrix comprises a preponderant proportion of grains less than 30 microns in size, and wherein it contains fine TiB_2 crystals having an average size of about 1 micron in highly dispersed form along the grain boundaries of the aluminum matrix.

3,961,996

PROCESS OF PRODUCING SEMICONDUCTOR LASER DEVICE

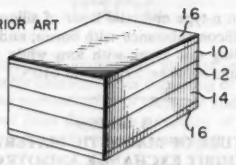
Hirofumi Namizaki, and Hirofumi Kan, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 17, 1974, Ser. No. 515,616

Claims priority, application Japan, Oct. 23, 1973, 48-119221

Int. Cl.² H01L 7/36, 7/38

U.S. Cl. 148—171 6 Claims

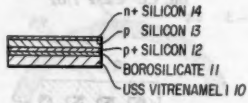


1. A process of producing a semiconductor laser device comprising the steps of forming, on a semiconductor substrate of a first type conductivity, a first semiconductor layer of the first type conductivity, a second semiconductor layer of the first type conductivity and a third semiconductor layer of the first type conductivity in the named order one after another, each of said semiconductor substrate and said second semiconductor layer being of a semiconductive material relatively narrow in a forbidden band width, each of said first semiconductor layer and said third semiconductor layer being of a semiconductor material relatively broad in a forbidden band, selectively etching said third semiconductor layer from the exposed surface thereof to remove a region including the etched portion of said third semiconductor layer and that portion of said second semiconductor layer located below the latter and reaching said first semiconductor layer, forming a fourth semiconductor layer of a second type conductivity so as to completely fill the removed region said fourth semiconductor layer being of a semiconductive material relatively broad in a forbidden band width, converting those portions of said first, second and third semiconductor layers adjacent to said fourth semiconductor layer to the second type semiconductivity, disposing a first electrical connection in ohmic contact with said semiconductor substrate, and disposing a second electrical connection in ohmic contact with said fourth semiconductor layer.

3,961,997
FABRICATION OF POLYCRYSTALLINE SOLAR CELLS ON LOW-COST SUBSTRATES

Ting L. Chu, Dallas, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 12, 1975, Ser. No. 576,488
Int. Cl.² H01L *31/00, 27/14, 29/04*
U.S. Cl. 148—174 **5 Claims**

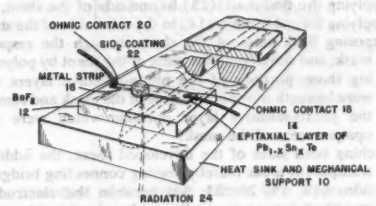


1. A method of fabricating low-cost polycrystalline silicon solar cells supported on a steel substrate, which comprises: coating said steel substrate with a diffusion barrier selected from the group consisting of silica, borosilicate, phosphosilicate or mixtures thereof; and depositing successive layers of polycrystalline silicon containing appropriate dopants over said coated steel substrate such that p-n junction devices are formed which effectively convert solar energy to electrical energy.

3,961,998
VACUUM DEPOSITION METHOD FOR FABRICATING AN EPITAXIAL PbSnTe RECTIFYING METAL SEMICONDUCTOR CONTACT PHOTODETECTOR

Kurt Peter Scharnhorst, Beltsville; Richard F. Bis, Mount Airy; Jack R. Dixon, Silver Spring; Bland B. Houston, Jr., Silver Spring; Richard W. Brown, Silver Spring, and Harold R. Riedl, Adelphi, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 9, 1975, Ser. No. 566,461
Int. Cl.² H01L *21/363, 27/14, 31/00*
U.S. Cl. 148—175 **15 Claims**



1. A method for forming a photovoltaic, epitaxial film, metal contact radiation detector for detecting radiation having wavelengths ranging from 8 to 14 microns comprising the steps of:

depositing an epitaxial crystalline layer selected from the group consisting of:

$Pb_{1-x}Sn_xTe$,

$Pb_{1-x}Sn_xSe$, and

mixtures thereof

by the quasiequilibrium method on a thermally conducting, electrically insulating crystalline substrate of a material having a face-entered cubic lattice with spacing between atoms equal to that of said epitaxial crystalline layer and having a coefficient of thermal expansion approximately equal to that of said epitaxial crystalline layer wherein x is a quantity having an appropriate value for detecting electromagnetic radiation having wavelengths ranging from 8 to 14 microns;

thermally evaporating a strip of metal over at least a portion of said epitaxial crystalline layer without exposing said epitaxial crystalline layer to ambient gases so as to form a rectifying metal-semiconductor contact;

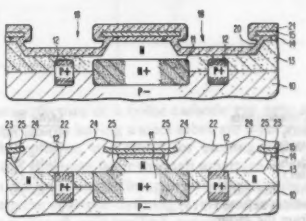
thermally evaporating a protective electrically insulating layer over said metal-semiconductor contact without exposing said metal-semiconductor to ambient gases;

bonding said crystalline subtrate to a heat sink.

3,961,999
METHOD FOR FORMING RECESSED DIELECTRIC ISOLATION WITH A MINIMIZED "BIRD'S BEAK" PROBLEM

Igor Antipov, Pleasant Valley, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Filed June 30, 1975, Ser. No. 592,015
Int. Cl.² H01L *21/76, 21/20*
U.S. Cl. 148—175 **5 Claims**



1. In the fabrication of integrated circuits, a method for forming dielectrically isolated regions in a silicon substrate comprising

forming a layer of silicon dioxide on a surface of the substrate,

forming a masking layer of silicon nitride having a plurality of openings on said silicon dioxide layer

etching a plurality of openings through the masked silicon dioxide layer in registration with and having greater lateral dimensions than the silicon nitride mask openings, whereby said silicon dioxide layer openings undercut and expose the underside of the silicon nitride layer at the periphery of said silicon dioxide layer openings

etching a plurality of recesses in the silicon substrate respectively in registration with the openings through the silicon dioxide and silicon nitride layers,

depositing a layer of silicon to at least partially fill said recesses and cover said exposed underside of said silicon nitride layer, and

thermally oxidizing the silicon in and abutting said recesses to form regions of recessed silicon dioxide substantially coplanar with the unrecessed portions of the silicon substrate.

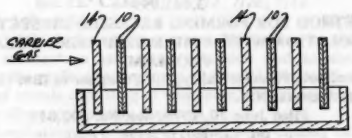
3,962,000
BARIUM ALUMINOBOROSILICATE GLASS-CERAMICS FOR SEMICONDUCTOR DOPING

James E. Rapp, Oregon, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 431,212, Jan. 7, 1974, Pat. No. 3,907,618. This application Dec. 20, 1974, Ser. No. 534,860
The portion of the term of this patent subsequent to Sept. 23, 1992, has been disclaimed.
Int. Cl.² H01L *7/36*
U.S. Cl. 148—189 **7 Claims**

1. In the process doping a semiconductor wherein a semiconductor and a glass-ceramic dopant host for vapor phase transport of B_2O_3 are maintained in vapor phase communication at a temperature and for a time sufficient to form a zone of P-type conductivity in said semiconductor, the improvement comprising using a glass-ceramic dopant host which has

been formed by the in-situ thermal crystallization of a barium alumino borosilicate parent glass composition containing less than about 0.5 mol percent of alkali metal oxides and consisting essentially of:



Components	Mole %
SiO_2	40<to 60
Al_2O_3	10 to 30
B_2O_3	20 to 40
BaO	1 to 15
Alkaline earth oxides selected from the group consisting of BaO, MgO, CaO, SrO, and mixtures thereof	3 to 20

Wherein $4 \geq \frac{Al_2O_3}{\text{Alkaline earth oxides}} \geq 1.5$

Wherein the BaO content is about 1–15 mole % of said composition.

3,962,001

METHOD OF MANUFACTURING A CAP-SENSITIVE AND NON-SENSITIVE AQUEOUS GEL SUSPENSION EXPLOSIVE

Edwin G. Marhofer; Mike L. Marrello, and Glenn E. Tolle, all of Pittsburg, Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Mar. 10, 1975, Ser. No. 556,754
Int. Cl. C06b *33/14*
U.S. Cl. 149—41 **6 Claims**

1. The method of manufacturing a cap-sensitive aqueous gel suspension explosive consisting essentially of the steps:

a. Mixing with a 30 to 40 weight percent aqueous solution of hexamethylenetetramine sufficient nitric acid to obtain a pH of 5.0 to 5.3, while controlling the temperature of the resulting mixture so that it does not rise above 66°C, so as to produce an aqueous solution in which the hexamethylenetetramine content is from 25 to 35 weight percent; then dissolving in this solution sufficient ammonium perchlorate to yield a concentration of from 5.0 to 6.0 percent, sufficient sodium nitrate to yield a concentration of 8.0 to 9.0 percent and sufficient ammonium nitrate to yield a concentration of 30 to 45 percent in the resulting solution;

b. into each 100 parts of the solution resulting from step (a) mixing thoroughly 60 to 65 parts by weight of finely ground ammonium nitrate and sufficient polysaccharide gum and crosslinking agent to thicken the mixture to a gel-like consistency;

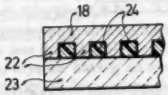
c. after the mixture produced in step (b) has become thickened, mixing from 6 to 8 parts of paint pigment grade aluminum powder therewith until the mixture is uniform in appearance.

3,962,002

METHOD FOR MAKING COMB ELECTRODE FOR ELECTRICAL RECORDING APPARATUS

Ludwig Finkbeiner, Walheim; Hans-Christoph du Mont, Renningen, Malmsheim; Kurt Hurst, and Manfred Koder, both of Stuttgart, all of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Filed Sept. 25, 1974, Ser. No. 509,245
Claims priority, application Germany, Oct. 5, 1973, 2350026
Int. Cl.² C23F *1/02*
U.S. Cl. 156—3 **14 Claims**



1. Method to make a comb electrode array for electric recording apparatus, particularly for use with metallizing strip recording media,

to provide closely spaced elongated conductive strip electrodes (22), insulated from each other by an insulating gap and having a recording terminal end portion (22), the other end portion being formed as a connecting portion (26) for connection to an external circuit, the steps of

providing a thin sheet of springy, hard sheet metal (10);

coating the sheet metal on both surfaces with a photosensitive layer (11,12);

providing a first mask (13) having transparent areas corresponding to the electrode configuration and, in addition, having transparent areas (15, 16, 17) crossing said electrode configuration, the additional crossing transparent areas being located between said end portions to place the connecting portions (18, 19) between said end portions (22, 26) of the electrodes;

providing a second mask (14) at least having transparent areas corresponding to the electrode configuration;

applying the first mask (13) to one side of the sheet;

applying the other mask (14) to the other side of the sheet;

exposing both sides of the sheet through the respective mask, and developing the sides of the sheet by polymerizing those portions of the photo-sensitive layers which were beneath transparent areas of the mask and removing the photo-sensitive layer portions which were under opaque areas of the mask;

etching both sides of the developed sheet, the additional transparent areas thereby leaving connecting bridge portions (18, 19, 20; 33, 34) between the electrodes to provide for a mechanically stable sub-assembly suitable for further handling;

adhering the attached electrode sub-assembly array on a carrier substrate (23, 28) located against the side adjacent the second mask; and

removing the connecting portions (18, 19, 20; 33, 34) after the sub-assembly has been adhered to said carrier substrate (23, 28).

3,962,003

METHOD OF FORMING MAGNETIC BRUSH SUPPORT MEMBER

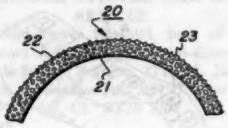
Arthur Drummond, Jr., Walworth, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 414,015, Nov. 8, 1973, Pat. No. 3,893,815. This application Jan. 29, 1975, Ser. No. 544,978
Int. Cl.² C23F *1/02*
U.S. Cl. 156—6 **2 Claims**

1. The process of forming a magnetic brush support member comprising a cylindrical sleeve having a surface adapted

to support a magnetic brush including magnetic particles comprising:

providing a composite including a metal binder component of aluminum and a particulate second phase component of tungsten carbide, said tungsten carbide component having a greater abrasion resistance than said aluminum component, said tungsten carbide particles having an irregular shape with jagged edges;



centrifugally casting said composite material into the shape of said cylindrical sleeve, whereby said tungsten carbide particles are segregated toward said support surface;

etching said aluminum component to dissolve a portion of said aluminum about said tungsten carbide component so that the tungsten carbide component protrudes from the surface of said aluminum component.

3,962,004

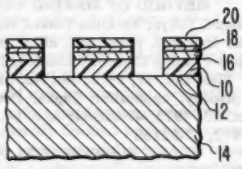
PATTERN DEFINITION IN AN ORGANIC LAYER

Kurt Jacques Sonneborn, Lebanon, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1974, Ser. No. 528,402

Int. Cl.² C23F 1/04

U.S. Cl. 156—11 **8 Claims**



1. In a method of forming a pattern in a layer of cured organic material on a substrate wherein an etch mask comprising a layer of photoresist is formed above said layer of organic material using conventional photolithographic processes and said pattern defined by said mask is etched in said layer of organic material, the improvement in said method comprising the step of depositing a layer of silicon dioxide on said layer of cured organic material prior to forming said etch mask.

7. A method of forming a pattern in a layer of cured organic material on a substrate comprising the steps of:

depositing a layer of silicon dioxide on said layer of cured organic material,

applying a film of primer solution comprising a silane derivative on said layer of silicon dioxide,

forming a layer of photoresist on said film,

exposing selectively through a mask said layer of photoresist to light,

developing said layer of photoresist,

etching said pattern in said layer of cured organic material in an ultrasonic etch bath utilizing said layer of photoresist as an etch mask, and

removing said layer of photoresist.

3,962,005

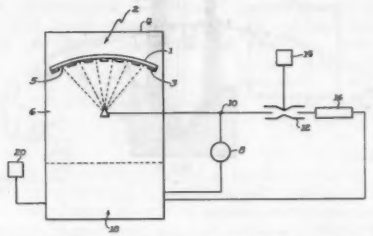
METHOD FOR ETCHING SHADOW MASK AND REGENERATING ETCHANT

Martin Lerner, River Forest, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed June 30, 1975, Ser. No. 591,735

Int. Cl.² C23F 1/04

U.S. Cl. 156—16 **3 Claims**



1. In the manufacture of a color cathode ray tube shadow mask characterized by having a steel substrate layer and a thin aperture-defining layer, a method for etching a pattern of apertures in the substrate layer through a pattern of apertures preformed in the aperture-defining layer without substabtially further etching the aperture-defining layer, and for reclaiming the etchant employed, said method comprising,

etching said substrate layer of said shadow mask through said pattern of apertures in said aperture-defining layer with a ferric sulphate etchant drawn from a main reservoir, said etching process being characterized by a reaction of said ferric sulphate forming a used etchant containing ferrous sulphate;

continuously removing a portion of said used etchant material;

efficiently regenerating said portion of said used etchant by adding to it sulfuric acid and hydrogen peroxide wherein said hydrogen peroxide is caused to be sucked from a source of hydrogen peroxide into a narrow stream of said portion of said used etchant to effect a mixing of said hydrogen peroxide with said used etchant without exposure of the etchant to the atmosphere, without the introduction of substantial gravitational effects, and without any risk of inducing a backflow of said used etchant material into the source of hydrogen peroxide; and

returning the thus regenerated ferric sulphate formed from a chemical reaction of said ferrous sulphate, said sulfuric acid, and said hydrogen peroxide to the main reservoir.

3,962,006

COLLAPSIBLE THERMOPLASTIC TUBULAR CONTAINER AND METHOD OF PRODUCING THE SAME

Tadao Saito, and Isamu Ito, both of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 460,919, April 15, 1974. This application June 23, 1975, Ser. No. 589,720

Claims priority, application Japan, Apr. 23, 1973, 48-45975

Int. Cl.² B29C 27/02

U.S. Cl. 156—69 **3 Claims**

1. A method of producing a tubular container, comprising the steps of:

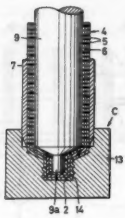
supporting a sleeve formed of a laminated resin with an impermeable layer between a tubular member and a core inserted in said tubular member;

continuously extruding a molten thermoplastic resin film formed of at least two resin layers and having an impermeable layer;

cutting a disc from said thermoplastic resin film;

welding said disc to the open end of said sleeve under the influence of the latent heat of said disc and thereby clos-

ing said open end so that the impermeable layers of said disc and sleeve may come into contact with each other to form an impermeable layer at the junction between said disc and said sleeve; and



forming a head member in a pressing process employing a female mold and said core.

3,962,007

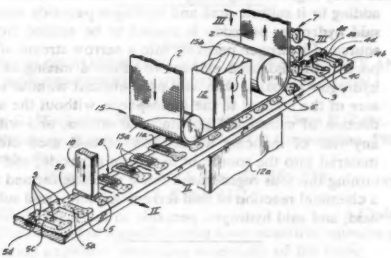
METHOD OF MAKING SLIDE-FASTENER STRINGERS

Helmut Heimberger, Grenzach, Germany, assignor to Opti-Holding AG, Glarus, Switzerland

Division of Ser. No. 436,629, Jan. 25, 1974. This application Nov. 1, 1974, Ser. No. 520,443

Int. Cl.² B32B *31/16*

U.S. Cl. 156—73.1 3 Claims



1. A method of making a slide fastener stringer half comprising the steps of molding a coupling element in the form of a succession of thermoplastic synthetic resin couplings in successive cavities of an endless mold carrier, the cavities being open to one side and defining for each such coupling member a coupling head, a fastening portion for mounting the coupling member on a tape and a connecting portion for linking each member with an adjacent member; embossing the synthetic resin at an elevated temperature in each cavity by pressing a tool into at least one of the portions thereof for displacing the synthetic resin opposite to the pressing direction and around said tool to form an array of welding humps at said one of said portions while forcing the synthetic resin into contact with all of the surfaces defining the respective cavities; and ultrasonically welding said coupling element to a support tape under heat and pressure at said welding humps substantially immediately upon the embossing thereof.

3,962,008

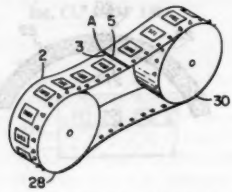
MESSAGE TAPE FOR INSTRUMENT DISPLAY SYSTEMS

Vincent Scardilli, West Orange, and Arthur Sussman, Jersey City, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Division of Ser. No. 203,621, Dec. 1, 1971, Pat. No. 3,900,647. This application Mar. 17, 1975, Ser. No. 559,296

Int. Cl.² B29C *27/08;* B32B *31/16*

U.S. Cl. 156—73.4 5 Claims



1. A method for manufacturing a message tape formed in a closed loop for instrument display systems comprising:

providing a clear plastic backing lamination;

applying a metallic lamination over the backing lamination;

cutting messages through the metallic lamination to the backing lamination;

applying a plurality of color coding dyes over the metallic lamination, and each of said dyes selectively extending through a cut message;

retaining the color coding dyes with the backing lamination;

providing longitudinally extending ends on the plastic backing lamination; and

splicing said ends to provide the closed tape loop.

3,962,009

DECORATIVE LAMINATED STRUCTURES AND METHOD OF MAKING SAME

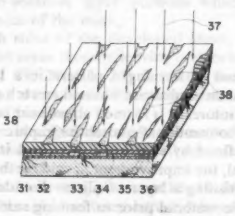
Kazuto Minami, Tokyo; Norihiko Tsukui, Higashikurume, and Tsunehiko Imamoto, Funabashi, all of Japan, assignors to Dai Nippon Printing Company Limited, Tokyo, Japan

Filed Dec. 11, 1972, Ser. No. 313,661

Claims priority, application Japan, Dec. 11, 1971, 46-99866; Jan. 13, 1972, 47-05564; Apr. 14, 1972, 47-37600; May 27, 1972, 47-52168

Int. Cl.² B32B *31/26*

U.S. Cl. 156—85 32 Claims



1. A method of making a decorative laminated structure having a predetermined surface pattern of convexes and concaves, said concaves being non-perforated and corresponding to picture areas of said laminated structure of a heat-sensitive ink composition containing a heat-absorbing coloring agent; and comprising printing a predetermined pattern of heat-sensitive picture areas on a surface of a heat-shrinkable resin sheet, said heat-sensitive picture areas being a heat-sensitive ink composition containing a heat-absorbing coloring agent; adhering a base sheet to one of the surfaces of said heat-shrinkable resin sheet to form an integral composite material; and irradiating the resultant composite material with an infrared or near infrared heat ray for a sufficient time such that

heat energy is preferentially absorbed by said heat-sensitive ink composition causing said heat-shrinkable resin sheet to shrink locally and form non-perforated concaves at areas corresponding to said heat-sensitive picture areas.

3,962,010

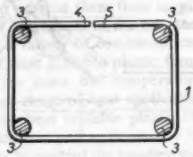
METHOD OF MANUFACTURING A BODY FOR A VALISE, SUITCASE, ATTACHE CASE OR SIMILAR ARTICLE

Joannes Riou, and Pierre Silvestri, both of Saint-Etienne, France, assignors to Rusi Societe, Saint-Etienne, France

Continuation-in-part of Ser. No. 271,536, July 13, 1972, abandoned. This application Jan. 8, 1975, Ser. No. 539,433

Int. Cl.² B32B 7/08

U.S. Cl. 156—93 **18 Claims**



1. A method of manufacturing a stiffening frame forming the body of a valise, suitcase, luggage and similar article, constituted of a bottom body frame and a complementary adjoining lid frame, each said frame being of a honeycombed material and formed by the steps of: cutting a section from a profiled strip of plastic material of honeycombed cross-section having a width corresponding to the height of a respective frame being formed by said strip and of a length conforming to the periphery of the article; bending said strip about an axis perpendicular to said strip length while concurrently applying heat thereto so as to form said frame configuration in conformance with the generally finished peripheral contour of said body; and mutually joining the adjacent ends of said formed strip ends to provide a substantially finished article body.

3,962,011

COMPOSITE OF POLYAMINE BONDED TO RUBBER AND METHOD FOR MAKING THE SAME

Gerard E. van Gils, Tallmadge, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 316,206, Dec. 18, 1972, Pat. No. 3,872,937. This application Oct. 21, 1974, Ser. No. 516,311

Int. Cl.² B29H 5/02; C09J 5/04

U.S. Cl. 156—110 A **9 Claims**

1. A method for adhering a polyamide reinforcing element to a rubber compound which comprises dipping said element in a first dip consisting essentially of a liquid dispersion or suspension of a minor amount of an epoxide having an average of from about 2 to 4 epoxide groups per molecule and having a molecular weight up to about 600, drying said dipped element, dipping said dried polyepoxide treated element in a second dip consisting essentially of an aqueous alkaline dispersion of a minor amount of a mixture of a major amount of a rubbery vinyl pyridine copolymer and a minor amount of a heat reactable 2,6-bis(2,4-dihydroxy phenyl methyl)-4-chlorophenol composition, drying the same, and combining said twice dipped and twice dried element with a vulcanizable rubber compound and vulcanizing the same.

3,962,012

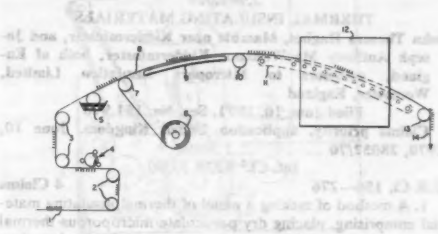
PROCESS FOR LAMINATING PRESSURE-SENSITIVE MATERIAL

Frederick George Schumacher, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed June 28, 1974, Ser. No. 484,306

Int. Cl.² B32B 31/08

U.S. Cl. 156—164 **17 Claims**



1. In the process for laminating a primary and a secondary sheet, the face side of said primary sheet being subject to distortion by pressure or friction, said process comprising applying an adhesive to at least one of the surfaces selected from the group consisting of the back side of said primary sheet and the mating side of said secondary sheet, contacting the mating side of said secondary sheet with the back side of said primary sheet, pressing the primary and secondary sheets firmly together and setting the adhesive, the improvement comprising pressing the primary and secondary sheets firmly together, solely by applying pressure from the back side of said secondary sheet to the primary and secondary sheets under tension by pressure means to prevent distortion of the face side of said primary sheet until at least 50 percent of the terminal bond strength is developed.

3,962,013

METHOD OF FORMING A BEARING HOLE IN THE BODY OF A STRAP MEMBER MAINLY ADAPTED FOR USE AS A WATCH STRAP

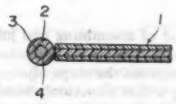
Toru Mashida, Tokyo, Japan, assignor to NCO Works, Ltd., Tokyo, Japan

Filed Mar. 10, 1975, Ser. No. 556,835

Claims priority, application Japan, Sept. 4, 1974, 49-102340; Oct. 17, 1974, 49-120176

Int. Cl.³ B29C 19/04; B29H 5/26

U.S. Cl. 156—215 **14 Claims**



1. In the manufacture of a strap member comprising a body which includes at least one layer substantially composed of a thermoplastic resin and particularly suitable for use as watch strap, a method of forming a bearing hole in one end of said strap member for attaching said strap member onto a watch case or the like, comprising steps of:

a. preparing a tubular member of a thermoplastic resin with a central axis thereof penetrated by a core member of a material having a small dielectric loss and being of a nature not to be fused with the body of said strap member when heated;

b. placing said tubular member and strap member into a mold in such a fashion that the tubular member is in side-by-side contact with one end of the body of said strap member;

c. subjecting said tubular member and strap member to high-frequency adhesion so that the tubular member becomes fused with said end of said strap member body; and

d. removing said core member therefrom to form a bearing member therein.

3,962,014

THERMAL INSULATING MATERIALS

John Thomas Hughes, Mamble near Kidderminster, and Joseph Anthony MacWilliams, Kidderminster, both of England, assignors to Micropore Insulation Limited, Worcester, England

Filed June 10, 1971, Ser. No. 151,970

Claims priority, application United Kingdom, June 10, 1970, 28052/70

Int. Cl.² B32B *31/00*

U.S. Cl. 156—276 4 Claims

1. A method of making a panel of thermal insulating material comprising, placing dry particulate microporous thermal insulating material having an average particle size less than 100 milli-micro-meters in a bag consisting of porous sheet material, sealing the bag to form a complete enclosure for the insulating material, and applying pressure to the exterior of the bag to thereby cause the particles to bond together and consolidate the insulating material, to cause particles of the insulating material to penetrate into the pores of the material of the bag and bond the insulating material to the bag, and to create a tension strain in the material of the bag.

3,962,015

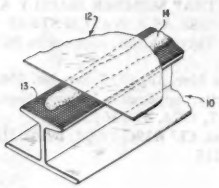
METHOD OF ASSEMBLING ROOF SHEETS TO ROOF BOWS

Fred G. Heimann, Mount Clemens, Mich., assignor to Fruehauf Corporation, Detroit, Mich.

Filed Dec. 20, 1974, Ser. No. 534,800

Int. Cl.² B23B *31/00*

U.S. Cl. 156—295 6 Claims



1. The method of assembling and joining structural metal members in a desired relative orientation with respect to each other which comprises the steps of:

a. positioning a first structural metal member to place at least one bonding surface thereof in upwardly facing accessible location;

b. heat insulating said bonding surface by placing a layer of porous heat insulating material thereon;

c. applying a hot melt adhesive to said layer of heat insulating material, said adhesive being at a temperature sufficient to render it fluid without significant penetration through said porous material;

d. positioning a second structural metal member in spaced relation to said bonding surface and at least approximately in said desired relative orientation of the second member with respect to said first member; and then

e. pressing the two members together in said desired relative orientation before said adhesive cools and loses its fluidity and with force sufficient to penetrate said adhesive through said porous material and into contact with said bonding surface.

3,962,016

PROCESS FOR JOINING ABUTTING THERMOPLASTIC SYNTHETIC-RESIN FOAM SHEETS

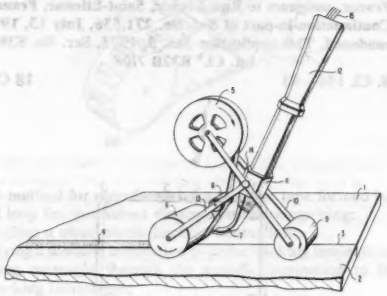
Franz Werner Alfter, Siegburg, and Hans-Ulrich Breitscheidel, Troisdorf, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

Filed Sept. 16, 1974, Ser. No. 506,335

Claims priority, application Germany, Sept. 14, 1973, 2346373

Int. Cl.² B29C *19/00*

U.S. Cl. 156—304 11 Claims



1. A process for joining abutting thermoplastic synthetic resin foam structures having planar peripheral surfaces by a strip covering the junction zone between the foam structures which comprises heating a metal strip to above the softening temperature of the synthetic resin foam, pressing the heated metal strip under slight pressure onto the junction zone and allowing the metal strip to cool whereby a bond is formed between the foam structures and the metal strip.

3,962,017

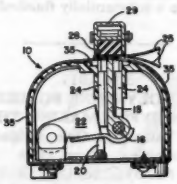
PLASTIC FILM SEALER

Harold G. Wyse, Dayton, Ohio, assignor to Gad-Jets, Inc., Dayton, Ohio

Filed Nov. 10, 1972, Ser. No. 305,537

Int. Cl.² C09J *5/00*; B32B *31/20*; B30B *15/34*

U.S. Cl. 156—306 11 Claims



1. In an apparatus for thermally joining a plurality of layers of heat sealable plastic film, including a heated bar which includes heating element means, said heated bar being movable upwardly into momentary thermal engagement with the layers of heat sealable plastic film to effect a thermal union thereamong, the improvement comprising:

a. a high temperature supporting film mounted independently of the heated bar and interposed between the bar and the plastic film layers to support the films in order to prevent them from sagging and from following the downward movement of the heated bar, the supporting film enabling a variety of combinations of numbers and thicknesses of heat sealable plastic films to be joined at substantially the samd heated bar temperature, and within a relatively broad range of heat application times,

b. a clamp opposite said high temperature supporting film for backing up the heat sealable plastic film layers when said heated bar is moved upwardly into thermal engagement therewith, and

c. a resilient elastomeric pad mounted in said clamp for engaging the heat sealable plastic films opposite said heated bar and high temperature film, the resiliency of said pad determining the bonding pressure applied to the heat sealable plastic film layers as they are clamped between said high temperature supporting film and said pad in said clamp.

9. A method for thermally joining a plurality of layers of heat sealable plastic film, comprising:

a. interposing a high temperature supporting film above a heated bar and beneath the plastic film layers, the heated bar including heating element means,

b. moving the heated bar upwardly into momentary thermal engagement with the high temperature supporting film and the plastic film layers to effect a thermal union among the heat sealable plastic films, the high temperature supporting film supporting the heat sealable plastic films independently of the downward movement of the bar in order to prevent them from sagging and following the downward movement of the bar, the supporting film thus enabling a variety of combinations of numbers and thicknesses of heat sealable plastic films to be joined at substantially the same bar temperature, and within a relatively broad range of heat application times, and

c. backing up the heat sealable plastic film layers with a resilient elastomeric pad opposite the high temperature supporting film to control the bonding pressure applied to the heat sealable plastic film layers according to the resiliency of the pad as they are clamped between the high temperature supporting film and the pad as the heated bar is moved upwardly into thermal engagement therewith.

3,962,018

POLYOLEFIN-ELASTOMER COMPOSITIONS

Bernard Costemalle, Waterloo, Belgium, and Arnold Cornelis van Ek, Westfield, N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Feb. 4, 1974, Ser. No. 439,319

Claims priority, application United Kingdom, Feb. 14, 1973, 7201/73

Int. Cl.² C09J *5/00, 7/00*

U.S. Cl. 156—306 **7 Claims**

1. A process for preparing a multi-layer composition comprising the steps of:

a. intimately mixing a blend of a thermoplastic polyolefin and an elastomer, said blend containing 10 to 40% by weight of elastomer, the polyolefin being low pressure polyethylene having a molecular weight of 30,000 to 500,000 or low pressure polypropylene having a molecular weight of 50,000 to 500,000 and fluxing the blend at a temperature greater than 150°C., and

b. applying said blend to an elastomer surface which is preheated to 150° to 200°C. prior to application of said blend, and

c. bonding said blend to said surface by heating said multilayer composition to a temperature of from about 150° to 250°C. and applying a pressure of between about 1 and 10 kg/cm².

3,962,019

FLOATING MANDREL DUCT MAKING APPARATUS

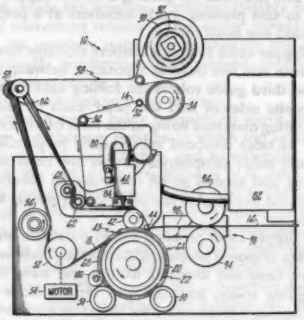
William E. Rejeski, Farmington, Conn., assignor to The Wiremold Company, West Hartford, Conn.

Filed June 16, 1975, Ser. No. 587,162

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—428 **27 Claims**

1. In a tubular duct making apparatus including a frame having feeding means for feeding a strip of sheet material, a wrapping device for forming the strip into continuous lapping wraps defining a generally tubular duct and comprising a mandrel supported on the frame for rotation, a guide mounted on the frame and having a contoured helical surface in fixed



surrounding relation to the mandrel, and a power operated drive for rotating the mandrel and simultaneously pulling the strip from the feeding means about the mandrel along a helical path established by the mandrel and the helical surface of the guide.

3,962,020

TIRE BEAD FLIPPING APPARATUS

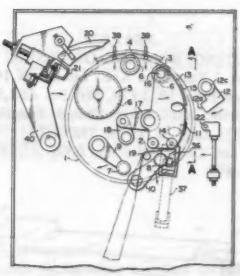
Hisashi Yonekawa, and Tosio Azuma, both of Higashimurayama, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 23, 1974, Ser. No. 535,852

Claims priority, application Japan, Dec. 28, 1973, 49-2646

Int. Cl.² B29H *17/34*

U.S. Cl. 156—460 **6 Claims**



1. A tire bead flipping apparatus comprising:

first, second and third guide rollers having circumferential grooves and mounted on the inner side of a tire bead for rotation about axes which are disposed parallel to the rotational axis of said tire bead, at least one of said first to third guide rollers being rotatingly driven for revolving said tire bead under guidance;

at least two tire bead push rollers rotatable on the inner side of said tire bead opposingly to said guide rollers about axes which are disposed parallel to the rotational axis of said tire bead and movable toward and away from said tire bead;

a pair of inner and outer pressing guide members positioned on the inner and outer sides of said tire bead and movable toward and away from each other for transferring said flipper cloth together with and in pressed contact with the inner periphery of said tire bead at a position between said first guide roller and said tire bead push rollers, said

inner pressing guide member being provided with an arcuate guide surface of a curvature same as that of the inner periphery of said tire bead; a flipper cloth guide roller rotatable about an axis parallel to the rotational axis of said tire bead for guiding a web of flipper cloth to be fed to said pressing guide members at a position between said tire bead rollers;

a pair of flipper cloth folding members movable toward and away from said tire bead at a position between said second and third guide rollers for folding said flipper cloth on opposite sides of said tire bead, each of said flipper cloth folding members being in the form of a curved blade having its sides disposed substantially in parallel to the inner and outer peripheries of said tire bead at an end opposing said second guide roller and in parallel to the sides of said tire bead at the other end opposing said third guide roller;

a pair of flipper cloth pressing rollers rotatable about axes which are disposed perpendicular to the rotational axis of said tire bead and movable toward and away from said third guide roller, each of said flipper cloth pressing rollers having a truncated cone shape tapered toward said third guide roller and adapted to resiliently be pressed against the circumferential surface of said third guide roller by the action of a spring;

a flipper cloth detection mechanism mounted on the outer side of said tire bead opposingly to one of said pressing guide members and movable toward and away from said tire bead for detecting the leading end of said flipper cloth to produce a signal for stopping said one of said first to third guide rollers;

a cutting mechanism including a slit formed obliquely across said inner pressing guide member and a cutting blade adapted to run along said slit for severing said flipper cloth; and

flipper cloth holding means including a pair of flipping cloth holders movable toward and away from said arcuate guide surface of said inner pressing guide member for holding said flipper cloth on said inner pressing guide member at opposite sides of said slit.

3,962,021

TRANSPRINTING, BONDING OR FUSING MACHINES

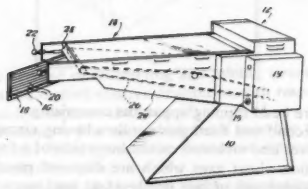
David Weisfeld, 3 Etheldene Ave., London N.10, England

Filed Mar. 19, 1974, Ser. No. 452,520

Claims priority, application United Kingdom, Mar. 22, 1973, 13962/73; Aug. 22, 1973, 39878/73

Int. Cl.² B29J *5/00*; B32B *31/20*

U.S. Cl. 156—499 **8 Claims**



1. A machine for applying material to a piece of material by bonding two pieces of material together or printing a transfer onto a piece of material, comprising a frame; a preparation table supported by the frame, on which the material is laid prior to being fed into the machine; a drum located within said frame and mounted for rotation about a horizontal axis; an endless belt that contacts the surface of said drum and extends at least part way around the surface thereof to form a bonding zone; a pressure roller located within the machine frame at one end of the bonding zone; an idler roller located within the machine frame at the other end of the bonding zone; heating means exterior to the surface of the drum and extending over a substantial part of the bonding zone; means for applying a predetermined constant pressure to said pressure roller to squeeze said belt into frictional contact with the drum; means for rotating said pressure roller thereby to drive the endless belt and the drum into rotation through the frictional contact maintained by the pressure applied to said pressure roller, the direction of rotation being such that said idler roller is at the upstream end of the bonding zone with respect to material fed therein from the preparation table, whilst the pressure roller is at the downstream end of the bonding zone; means for guiding said endless belt in a closed loop outside said bonding zone; a tensioning roller mounted within a framework, said framework supporting the preparation table; manually operated screw adjusting means for altering the position of the tensioning roller, to thereby adjust the tension of the endless belt; and an unload tray comprising a frame pivotably mounted at all four corners, and a series of equi-spaced nylon threads stretched between opposite sides of the frame, said threads being parallel to the axis of rotation of said tensioning roller, whereby as the tracking of the tensioning roller is changed, the effective shape of the tray is altered, thus allowing the nylon threads to remain parallel with the other two sides of the frame.

3,962,022

METHOD AND APPARATUS FOR PRODUCING A CONTINUOUS BAND OF RUBBERIZED FABRIC HAVING TRANSVERSAL REINFORCING METAL ELEMENTS

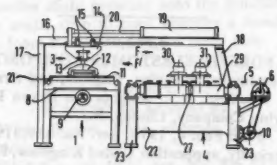
Franco Bottasso, and Antonio Pacciarini, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed July 1, 1974, Ser. No. 485,007

Claims priority, application Italy, July 3, 1973, 26121/73

Int. Cl.² G03D *15/04*

U.S. Cl. 156—507 **6 Claims**



1. An apparatus for manufacturing a continuous band of rubberized fabric provided with transversal reinforcing metal cords by butt-splicing, without overlapping, two identical quadrangular pieces of said rubberized fabric along their facing splicing edges, parallel to said metal cords, said edges being respectively defined as "terminal end" and "initial end", the "terminal end" being the edge of the continuous band already built up and the "initial end" being the edge of the piece to be spliced to said band, said apparatus comprising:

a splicing device provided with two symmetrical operating parts, each having a base element carrying a first series of fingers, parallel to one another, arranged side-by side and spaced apart from one another, which constitute the supporting plane for said pieces, said supporting planes on the two operating parts being coplanar and said operating parts being each provided with a movable element vertically displaceable with respect to its base element, said moveable element carrying a second series of fingers, parallel to one another, which are opposite to the fingers of the respective base element, the series of fingers of said operating parts being intercalated with each other, each of said operating parts being able to lock a piece of fabric between said first and said second series of fingers by the lowering of the moveable element on the base element, and being able subsequently to butt-splice said pieces by the approach of one operating part to the other,

a translating element having means for advancing each piece to said splicing device,

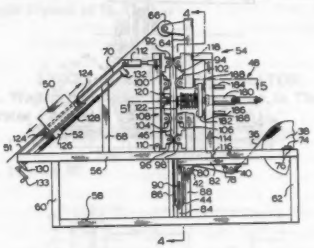
a drum for collecting the continuous band formed after splicing the two pieces, said splicing device being characterized in that each finger, in its zone directed towards the opposite finger, has the shape of a step formed by two substantially parallel surfaces, the first of which is that situated at the finger end directed towards the splicing line of the pieces, and the second is that situated at the remaining part or body of the finger, said two surfaces being so arranged that, when said second surfaces of two opposite fingers are in mutual contact, a gap is still existing between said first surfaces.

3,962,023

APPARATUS FOR APPLYING HANDLES TO PLASTIC BAGS

Waldemar Hofer, Sherwood Park, Canada, assignor to MacKenzie Trading Co. Ltd., Edmonton, Canada

Filed Mar. 27, 1975, Ser. No. 562,705
Claims priority, application Canada, July 17, 1974, 205110
Int. Cl.² B32B *31/00*
U.S. Cl. 156—514 **15 Claims**



1. Apparatus for applying plastic handles to tubular plastic bag stock the apparatus comprising:

a drive mechanism adapted to feed the bag stock through the apparatus intermittently in discrete lengths, each one of said lengths corresponding to the length of a bag;

a combination cutting and welding mechanism including a float piece adapted to be positioned inside the bag stock and a head movable axially along a predetermined line of action, the float piece having a central main portion and a pair of relatively thin wing members dependent from the main portion in a substantially common plane lying perpendicularly to said line of action;

means adapted to combine with the main portion of the float piece to restrain the float piece in a position at right angles to said line of action such that the float piece will remain in a predetermined position relative to said line of action as the bag stock is fed over the float piece by the drive mechanism;

a handle transport mechanism adapted to feed pairs of handles to respective positions one at either side of the float piece immediately adjacent respective outer sides of the bag stock with the handles disposed similarly about said line of action and in respective planes which are generally perpendicular to said line of action;

said combination cutting and welding mechanism being operable along said line of action when the bag stock is stationary, and further comprising: a guide means coupled to the head to restrain the head to move axially along said line of action; actuator means coupled to the head for moving the head axially; heating elements coupled to the main portion of the float piece; electrical contacts coupled electrically to the heating elements, these elements being shaped and positioned about said line of action such that upon heating the elements and energising said actuator to apply forces to press the sides of the bag stock between respective handles and heating elements, the respective bag stock sides and handles are welded to one another;

said head comprising: a cutter adapted to pierce the bag stock inside the handles; a retainer slidably mounted for axial movement relative to the cutter; means adapted to bias the retainer outwardly relative to the cutter; and electrically conductive shoes aligned axially with said electrical contacts;

a back stop aligned with the retainer;

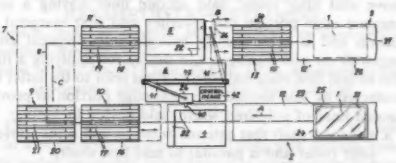
said actuator means being operable to move the head between a withdrawn position in which the head is clear of the bag stock and handles, and an extended position in which the cutter projects through both sides of the bag stock and the retainer and back stop apply compressive forces which hold the handles in contact with the bag sides so that the bag sides are then in thermal engagement with the heating elements to thereby weld the bag sides to the handles, the electrical connectors then being in engagement with the respective conductive shoes to complete an electrical circuit for heating the heating elements.

3,962,024

APPARATUS FOR LAMINATING INSULATING WINDOW PANES OR THE LIKE

Otto Stehl, Essen-Bredeney, Germany, assignor to Flachglas Aktiengesellschaft Delog-Detag, Gelsenkirchen, Germany

Filed Sept. 3, 1974, Ser. No. 502,379
Claims priority, application Germany, Sept. 4, 1973, 2344461
Int. Cl.² B32B *31/00*
U.S. Cl. 156—539 **8 Claims**



1. An apparatus for bonding together the edges of a stack of rectangular workpieces in the production of a laminated unit, comprising:

intermittently operable transport means defining a generally U-shaped horizontal path for said stack with a first run, a second run substantially parallel to said first run and a transverse course interconnecting said runs at one end thereof, said transport means including a loading stage at an end of said first run opposite said transverse course and an unloading stage at an end of said second run opposite said transverse course;

a first press in said first run for clamping together a first pair of adjoining edges of said stack;

a second press in said second run for clamping together a second pair of adjoining edges of said stack, said presses being substantially aligned with each other; and

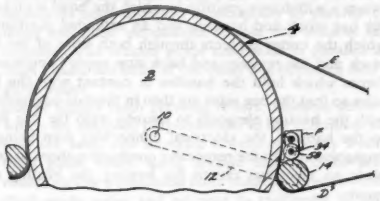
a common control station between said runs having access to both said presses, said control station including applicator means for a bonding agent to be spread onto said adjoining edges.

3,962,025

CORRUGATOR LINER BONDING DEVICE

Donald E. Jacobson, 14839 Wheatstone Ave., Norwalk, Calif. 90650

Filed Mar. 27, 1975, Ser. No. 562,459
Int. Cl.² B32B 31/04; B65C 11/04; B05C 1/00
U.S. Cl. 156—546 5 Claims



1. In combination with a corrugator having a rotating preheater roll supported on a horizontal first shaft, a pair of arms pivotally supported from said first shaft and disposed on opposite sides of said roll, an idler roller rotatably supported between said arms and spaced from said roll, a first liner of less width than the length of said roll that extends under said idler roller and then upwardly to contact said preheater roll, said first liner having a first marginal edge portion, a second liner of less width than the length of said roll that contacts said roll above said idler roller, said second liner having a second marginal edge portion that overlies said first marginal edge portion and is subsequently brought into physical contact therewith on said corrugator, a device for applying a film of glue to said first marginal edge portion prior to the latter being contacted by said second marginal edge portion to provide a bonded liner of a desired width, said device including:

a. a second shaft that extends between said arms above said idler roller and is parallel to said first shaft;

b. first means for adjustably supporting said second shaft in a non-rotatable position from said arms;

c. a resilient wheel rotatably mounted on said second shaft that is in frictional engagement with said idler roller and is driven as said idler roller rotates;

d. a glue reservoir disposed above said second shaft, said reservoir having a first sidewall adjacent said roll in which a vertical slot is defined;

e. second means for supporting said reservoir from said second shaft;

f. a third shaft rotatably supported in said reservoir parallel to said second shaft;

g. a glue applicator wheel disposed in said reservoir and rigidly secured to said third shaft, said wheel of substantially the same width as that of said first marginal edge portion, said wheel having the lower portion thereof in contact with glue in said reservoir, and said wheel projecting outwardly through said slot to contact said first marginal edge portion; and

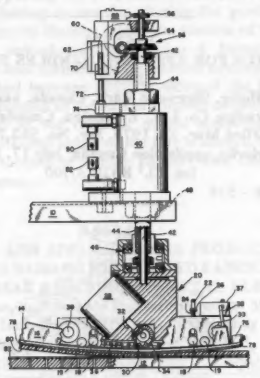
h. third means for transferring rotational movement from said resilient wheel to said third shaft to drive said applicator wheel to apply a film of glue to said first marginal edge portion as said first and second liners move over said preheater roll to bond said first and second liners together to form said bonded liner.

3,962,026

ORGANIC MATRIX STACKING HEAD

Lawrence A. Lottridge, Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed June 25, 1975, Ser. No. 590,277
Int. Cl.² B32B 31/00; G05G 9/00
U.S. Cl. 156—584 12 Claims



1. Apparatus for use in the manipulation of workpieces which are temporarily adhesively bonded to a planar supporting medium comprising:

rocker foot means, said rocker foot means having a curved surface adapted to contact a workpiece to be removed from the support medium initially in a narrow linear region;

support means for said rocker foot means, said support means permitting translational motion of said rocker foot means with respect to said support means;

means for mounting said support means for motion in a plane transverse to the supporting medium;

means for reciprocating said support means with respect to said mounting means and the supporting medium; and

means for imparting rotation to said support means.

3,962,027

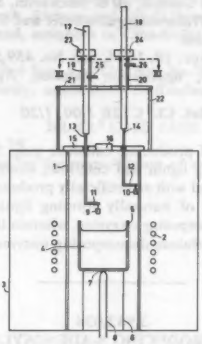
$Bi_4Ti_3O_{12}$ SINGLE CRYSTAL GROWTH FROM SATURATED SEEDED SOLUTION

Timothy Michael Bruton, Haywards Heath, England, assignor to U.S. Philips Corporation, Briarcliff Manor, N.Y.

Filed Sept. 9, 1974, Ser. No. 504,311
Claims priority, application United Kingdom, Sept. 11, 1973, 42629/73
Int. Cl.² B01J 17/04, 17/20; C01G 29/00
U.S. Cl. 156—624 6 Claims

1. A method of growing a single crystal of $Bi_4Ti_3O_{12}$, said method comprising, preparing a solution of TiO_2 in Bi_2O_3, adjusting the temperature of the solution to a temperature of about 5°C above the saturation temperature of the solution, maintaining the solution at said temperature while immersing polycrystalline TiO_2 into said solution until the solution contains a saturating amount of TiO_2, removing the undissolved

polycrystalline TiO_2 from the solution, immersing a $Bi_4Ti_3O_{12}$ seed crystal into said solution maintained at said temperature



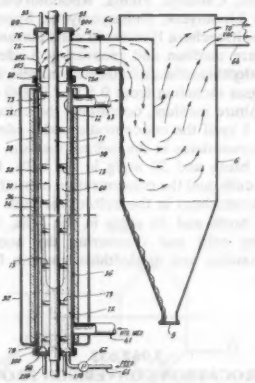
and then slowly cooling said solution thereby to cause growth of a single crystal of $Bi_4Ti_3O_{12}$.

3,962,028

SWEPT SURFACE EVAPORATOR

John C. Walsh, Winchester, Mass., assignor to The De Laval Separator Company, Poughkeepsie, N.Y.

Filed Sept. 9, 1974, Ser. No. 504,072
Int. Cl.² B01D 1/22
U.S. Cl. 159—6 W **5 Claims**



1. A swept surface evaporator comprising a vertical inner cylinder partly defining a chamber having an inlet at its lower portion for a material to be concentrated, pump means for delivering the material to said inlet, a vertical outer cylinder surrounding the inner cylinder and forming therewith a generally annular heating space for receiving a heating medium, means for rotating said material about a vertical axis in said chamber to form an upwardly opening cavity in the material, said rotating means including a rotor mounted for rotation on a vertical axis and having blade means for sweeping the inner surface of the inner cylinder, a suction line communicating with said chamber for drawing vapors from said cavity, said inner cylinder having an upward extension projecting above the top level of said blade means and heating space and forming an overflow outlet for concentrated material, and a fixed annular guide member located at the upper portion of said chamber within said extension and having a lower end substantially below the level of said overflow outlet, said guide member forming an inner passageway for discharging vapors to said suction line and forming with said extension an outer annular passage separate from said inner passage, said outer annular passageway leading upwardly to said overflow outlet.

3,962,029

METHOD OF CONTROLLING THE AMOUNT OF CHEMICALS IN LIQUIDS USED WITHIN THE CELLULOSE INDUSTRY AND RELATED INDUSTRIES

Karl Gustav Gunnar Wettermark, Taby; Per Ulf Isacsson, Vallentuna; Bengt Goran Hultman, Domsjoverken; Per Henrik Otto Johan Norberg, Sjalevad, and Bo Nils Olof Lindahl, Domsjoverken, all of Sweden, assignors to Mo och Domsjo AB, Ornskoldsvik, Sweden

Filed Oct. 17, 1974, Ser. No. 515,735
Claims priority, application Sweden, Oct. 17, 1973, 7314129
Int. Cl.² D21C 7/14
U.S. Cl. 162—49 **15 Claims**

1. A process for controlling the quantity of oxidizing bleaching agent in a liquor for treating cellulosic material, which comprises continuously mixing such liquor containing such oxidizing bleaching agent with at least one chemiluminescent reagent selected from the group consisting of 1,3-aminophthalic acid hydrazide, N,N′-dimethylacridinium dinitrate, and 2,4,5-triphenyl imidazole, which reacts oxidatively therewith in a manner to emit light; continuously measuring the intensity of such light; determining the amount of such oxidizing bleaching agent in the liquor by comparison of the light intensity thus obtained with the light intensity for previously measured calibration values corresponding to known quantities of such oxidizing bleaching agent; and then from such determination controlling the addition of such oxidizing bleaching agent to the liquor, to maintain a desired quantity of such oxidizing bleaching agent in the liquor.

3,962,030

BLEACHING WOOD PULP WITH SODIUM HYDROSULFITE IN THE PRESENCE OF HEXAMETHYLENETETRAMINE

Edward A. Sullivan, Beverly, Mass., assignor to Ventron Corporation, Beverly, Mass.

Division of Ser. No. 511,940, Oct. 3, 1974, abandoned. This application Apr. 18, 1975, Ser. No. 569,236
Int. Cl.² D21C 9/10
U.S. Cl. 162—72 **6 Claims**

1. In a process for bleaching wood pulp with sodium hydrosulfite under anaerobic conditions at a temperature between about 90°F and 180°F and at a pH of between about 4.0 and 7.0, the improvement which comprises conducting the bleaching in the presence of at least about 2 weight percent hexamethylenetetramine based upon the weight of sodium hydrosulfite, said weight percent of hexamethylenetetramine being effective to prevent formation of hydrogen sulfide during sodium hydrosulfite bleaching of wood pulp.

3,962,031

STOCK INLET FOR A PAPER MACHINE

Alfred Bubik, and Friedrich Platz, both of Ravensburg, Germany, assignors to Escher Wyss G.m.b.H., Ravensburg, Germany

Filed Aug. 23, 1974, Ser. No. 500,066
Claims priority, application Switzerland, Aug. 29, 1973, 12362/73
Int. Cl.² D21F 1/06
U.S. Cl. 162—338 **14 Claims**

1. A stock inlet for a paper machine comprising

a hole plate for receiving an obliquely delivered flow of stock, said plate having a flat base surface on an inlet side and a plurality of distributor passages extending therethrough from a respective inlet in said base surface for individual flows of stock; and

a plurality of bosses on said inlet side, each boss being disposed adjacent a respective inlet of a passage while projecting from said base surface and extending from said

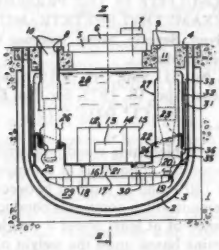
respective inlet in a direction upstream relative to the delivered flow, each boss having a maximum height adjacent a respective inlet and a breadth thereat of substantially the breadth of said respective inlet.

3,962,032

FAST NUCLEAR REACTOR

Jean-Marie Berniolles, Pierrevert, and Sabino Gallo, Paris, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 5, 1974, Ser. No. 448,395
Claims priority, application France, Mar. 7, 1973, 73.08075
Int. Cl.[2] G21C *15/00, 19/28*
U.S. Cl. 176—65 5 Claims



1. A fast reactor cooled by liquid sodium comprising a main reactor vessel having a vertical axis a reactor core supported by said main vessel, a primary vessel within said main vessel and containing said reactor core, said primary vessel separating hot liquid sodium discharged from said reactor core and cold liquid sodium, heat exchangers within said main reactor vessel, pumps circulating the cold liquid sodium discharged from said heat exchangers to said reactor core, an annular lateral skew section for said primary vessel, openings through said section receiving said heat exchangers and said pumps, said primary vessel having a shape of revolution about the vertical axis of said main vessel, a turned down edge for said skew section at the exterior of said primary vessel and means joining said turned down edge to said main vessel at a lower extremity of said edge, outlets of said heat exchangers being adjacent the lower surface of said skew section.

3,962,033

METHOD FOR PRODUCING CELLULOSE PULP

Karl-Erik Eriksson; Paul Ander; Björn Henningsson; Thomas Nilsson, and Bill Goodell, all of Stockholm, Sweden, assignors to Svenska Traforskningsinstitutet and Skogshogskolan, Stockholm, Sweden

Filed Apr. 10, 1974, Ser. No. 459,553
Claims priority, application Sweden, Apr. 16, 1973, 7305394
Int. Cl.[2] C12B *1/00, 1/20*
U.S. Cl. 195—8 14 Claims

1. A method of producing cellulose pulp from a starting material containing lignin and cellulose, comprising, treating the starting material with an artificially produced mutant of an organism capable of naturally forming lignin-decomposing and cellulose-decomposing enzymes, wherein the ability of the mutant to form cellulose-decomposing enzymes is reduced.

3,962,034

METHOD FOR PRODUCING S-ADENOSYLMETHIONINE OR METHYLTHIOADENOSINE BY YEAST

Takayasu Tsuchida, Kawasaki; Fumihiro Yoshinaga, Fujisawa, and Shinji Okumura, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Nov. 25, 1974, Ser. No. 527,071
Claims priority, application Japan, Nov. 27, 1973, 48-13309; Nov. 27, 1973, 48-13310
Int. Cl.[2] C12D *13/06*
U.S. Cl. 195—28 N 9 Claims

1. In a method for producing S-adenosylmethionine and methylthioadenosine which comprises culturing a yeast selected from the group consisting of members of the genus Saccharomyces, Candida, Pichia, Rhodotorula, Torulopsis, Trichosporon Lipomyces, Debaryomyces, Sporoboromyces, Cryptococcus, Kloechera Hansenula and Hanseniaspora in an aqueous culture medium and recovering S-adenosylmethionine and methylthioadenosine therefrom, the improvement which comprises including from 0.5 to 2.0 g/dl of L-methionine in the culture medium, continuing the culturing at a pH of from 2 to 5 until the concentration of S-adenosylmethionine which accumulates in the culture medium is at least 60 mg/dl in the broth and 30 mg/g in the cells, based on the weight of dry cells, and the concentration of methylthioadenosine which accumulates in the culture medium is at least 20 mg/dl in the broth and 10 mg/g in the cells, based on the weight of dry cells and recovering the accumulated S-adenosylmethionine and methylthioadenosine from the culture medium.

3,962,035

HYDROCARBON CONVERSION PROCESS

George Antos, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 24, 1974, Ser. No. 482,122
Int. Cl.[2] C07C *9/00*
U.S. Cl. 195—27 7 Claims

1. A process for converting waste material selected from the group consisting of animal waste, human waste and sewage sludge to prepare a saturated hydrocarbon fraction consisting essentially of gasoline which comprises:

a. reacting said waste material with a microorganism selected from the group consisting of *Butyribacterium rettgeri, Proprionibacterium freudenreichii* and *Acetobacter aceti* at a temperature of from 25°C. to 75°C. in an aerobic or anaerobic atmosphere to produce alkanoic acids containing up to 10 carbon atoms;

b. subjecting said alkanoic acids to catalytic decarboxylation to form said saturated hydrocarbon fraction at catalytic decarboxylation conditions; and

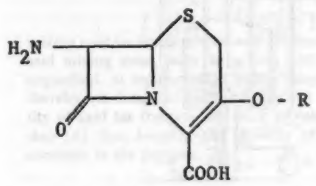
c. recovering said saturated hydrocarbon fracton.

3,962,036
PROCESS FOR THE MANUFACTURE OF 7-AMINO-CEPHALOSPORANIC ACID-TYPE COMPOUNDS

Manfred Liersch, Riehen, and Jakob Nuesch, Ariesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

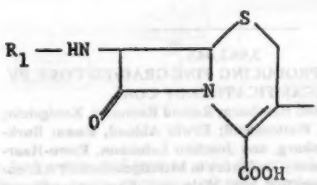
Filed Dec. 6, 1974, Ser. No. 530,116
Claims priority, application Switzerland, Dec. 20, 1973, 17902/73
Int. Cl.² C12D 13/06
U.S. Cl. 195—29 4 Claims

1. A process for the manufacture of amino compounds of the formula I



I

wherein R represents lower alkyl, wherein compounds of the formula II



II

in which R has the meaning already assigned to it and R_1 represents the acyl radical of a carboxylic acid, are treated with microorganisms possessing acylase activity or with extracts containing acylase or with the acylases themselves, in aqueous medium, and the compounds of the formula I are isolated from the solution.

3,962,037
COMPOSITION FOR STABILIZING AN ENZYME-CONTAINING REAGENT

Robert Jerry Mitchell, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jan. 30, 1975, Ser. No. 545,733
Int. Cl.² C12K 1/00
U.S. Cl. 195—63 8 Claims

1. A stabilized enzyme-containing reagent composition comprising a mixture of glycerol kinase and pyruvate kinase and a stabilizing composition consisting essentially of dextran and Cleland's reagent.

3,962,038
PREPARATION OF WATER-INSOLUBLE ENZYMES

Koji Kawashima, Chofu, and Keiji Umeda, Tokyo, both of Japan, assignors to Director of National Food Research Institute, Japan

Continuation-in-part of Ser. No. 332,239, Feb. 14, 1973, abandoned. This application Apr. 10, 1974, Ser. No. 459,624
Claims priority, application Japan, Mar. 9, 1972, 47-24150
Int. Cl.² C07G 7/02
U.S. Cl. 195—68 10 Claims

1. Process for producing a water insoluble enzyme which comprises mixing together (i) at least one water soluble monomer selected from the group consisting of acrylamide, bisacrylamide, acrylic acid, sodium acrylate, potassium acrylate and calcium acrylate, and (ii) an enzyme, freezing the resultant mixture at a temperature below about −5°C and maintaining the thus obtained frozen material at said temperature, irradiating said frozen material with a dose of from about 40 to about 100 Krad of gamma rays or X-rays under aerobic conditions to polymerize said monomer and entrap the enzyme in the resulting polymer lattice, and thereafter recovering the enzyme product.

3,962,039
ANALYTICAL PROCEDURE FOR THYROID HORMONES

Harold M. Bates, East Brunswick, N.J., assignor to Center for Laboratory Medicine, Metuchen, N.J.

Continuation-in-part of Ser. No. 495,869, Aug. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 463,880, April 24, 1974, abandoned. This application Aug. 8, 1975, Ser. No. 603,007
Int. Cl.² G01N 31/14, 33/16
U.S. Cl. 195—103.5 R 3 Claims

1. A process for the analysis of the thyroid hormone content of a blood serum sample containing a thyroid hormone bound to blood serum proteins, which comprises admixing with a sample of blood serum an effective amount of pepsin at a pH of about 1.0, incubating the sample for a period of time and at a temperature sufficient to allow the pepsin to digest the proteins to which the thyroid hormone is bound and to release the thyroid hormone from said proteins, adjusting the mixture to a pH at which the pepsin is inactive, and assaying the mixture for the released thyroid hormone.

3,962,040
METHOD AND APPARATUS FOR PLATING AND COUNTING AEROBIC BACTERIA

Jeptha E. Campbell, and James E. Gilchrist, both of Cincinnati, Ohio, assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

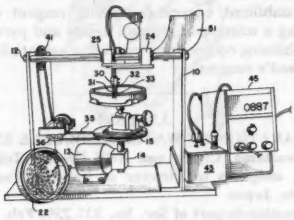
Division of Ser. No. 451,275, March 14, 1974, Pat. No. 3,892,632, which is a continuation-in-part of Ser. No. 149,137, June 2, 1972, Pat. No. 3,799,844. This application Jan. 28, 1975, Ser. No. 544,933
Int. Cl.² C12K 1/10
U.S. Cl. 195—127 10 Claims

1. An apparatus for counting aerobic bacteria on a bacterial growth plate on which bacterial solution has been deposited

in the form of a spiral with a continuously varying rate of deposition along the spiral, comprising:

means for directing a beam of light toward the plate;

sensing means, directed towards said plate so as to receive transmitted or reflected light from said beam directing means, for sensing the presence or absence of a bacterial colony on said plate;



traversing means for causing the point of intersection of the beam of light from said beam directing means and the plate to spirally traverse across the surface of the plate;

counting means for counting the bacterial colonies sensed by said sensing means; and

measuring means for measuring a parameter which is related to the area traversed by said point of intersection while said counting means is counting in such a manner as to allow, in combination with other preset parameters, the determination of said area.

3,962,041

METHOD AND APPARATUS FOR MEASURING THE OPACITY OF FLUIDS

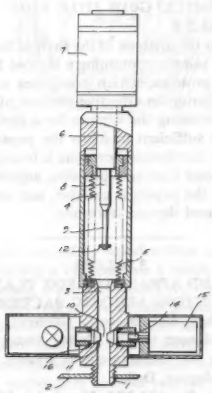
Hans Muller, Mannedorf, and Werner Stumpp, Stafa, both of Switzerland, assignors to Hans Muller, Mannedorf, Switzerland

Filed Mar. 17, 1975, Ser. No. 559,156

Claims priority, application Switzerland, Mar. 18, 1974, 3809/74

Int. Cl.² C12K 1/10

U.S. Cl. 195—127 **7 Claims**



1. Apparatus for measuring the opacity of fluids, particularly for monitoring the growth of microorganisms suspended in a gas-containing liquid medium by measuring turbidity, comprising wall means forming a measuring chamber adapted to be placed into communication with a vessel containing the medium to be measured; suction means for drawing a sample of the medium into the measuring chamber; and measuring means for measuring the turbidity of the sample.

3,962,042

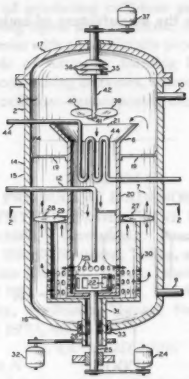
FERMENTATION APPARATUS

Emil A. Malick, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 13, 1975, Ser. No. 540,562

Int. Cl.² C12B 1/16

U.S. Cl. 195—143 **6 Claims**



1. A fermentation apparatus including;

a. a vessel with a chamber and having an interior surface, said vessel being adapted to contain a fluid;

b. a draft tube mounted in the interior of said vessel and having opposite ends with flow openings adjacent each end, said draft tube being spaced from said interior surface defining a flow path therebetween;

c. pump means in said vessel and positioned adjacent at least one of said draft tube ends for inducing flow of fluid through said draft tube;

d. an impeller positioned between said draft tube and said interior surface; and

e. means operably connected to said impeller for rotating same.

3,962,043

PROCESS FOR PRODUCING FINE-GRAINED COKE BY DEGASIFICATION OF COAL

Paul Schmalfeld, Bad Homburg; Roland Rammler, Konigstein; Werner Peters, Wattensheid; Erwin Ahland, Essen; Burkhard Bock, Duisburg, and Joachim Lehmann, Essen-Haarzopf, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main and Bergwerksverband GmbH, Essen-Kray, both of, Germany

Continuation of Ser. No. 335,217, Feb. 23, 1974, abandoned. This application Nov. 26, 1974, Ser. No. 527,316

Claims priority, application Germany, Feb. 23, 1972, 2208418

Int. Cl.² C10B 49/10

U.S. Cl. 201—21 **3 Claims**

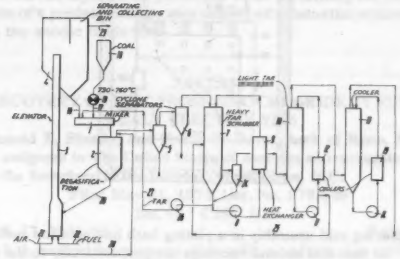
1. Process for producing fine-grained coke by degasification of fine-grained coal which comprises:

a. mixing coal to be degasified with recirculated, heated, fine-grained coke in a mixing zone; b. feeding the mixture from (a) to a degasification zone located below said mixing zone; pulses

c. withdrawing gases and vapors produced by degasification in step (b) from the top portion of said degasifiction zone, subjecting said gases and vapors to a mechanical dust

collection followed by fractional condensation, and recovering a dust-containing, high-boiling tar fraction;

d. feeding said tar fraction back to said mixing zone at a rate which is about twice the rate at which new high-boiling tar is formed by degasification in said degasification zone; and



e. mixing said tar fraction with said recirculated hot coke in said mixing zone, prior to mixing with said coal to be degasified, at temperatures in the range of 730°–760°C thereby cracking and eliminating about half of the quantity of said tar fraction fed back to said mixing zone in step (d) thus keeping the quantity of high-boiling tar constant in the process.

3,962,044

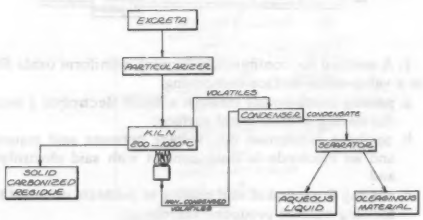
HEAT TREATING EXCRETA AND PRODUCTS THEREOF

John D. Mackenzie, Los Angeles, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 268,972, July 5, 1972, abandoned. This application June 17, 1974, Ser. No. 479,737

Int. Cl.² C10B *43/00*; **A47K** *11/02*; **E03D** *1/00*

U.S. Cl. 201—2.5 **6 Claims**



1. A method of treating solid dry animal excreta selected from the group consisting of solid livestock excreta, solid poultry excreta, solid human excreta in cake form, and mixtures thereof, to provide useful products therefrom, which method consists essentially of:

particulating said solid dry animal excreta to a mesh of about 5–50;

heating said dry particulate excreta in a closed heating zone by heating means to a temperature within a treating range of about 300°C to about 600°C;

maintaining said dry particulate excreta in said heating zone within said range for about 15 minutes to about 120 minutes sufficient to volatilize a portion of said excreta and partially carbonize the resultant solid residue;

separating and recovering said volatilized portion by condensation of condensibles and separation of water therefrom; and

cooling said residue and recovering the same.

3,962,045

APPARATUS FOR PYROLYSIS OF DOMESTIC AND OTHER WASTE MATERIALS

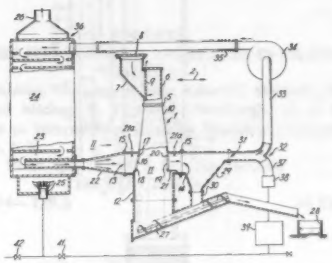
Edward Douglas, Welwyn, and Terence Walsh, Hitchin, both of England, assignors to National Research Development Corporation, London, England

Filed Aug. 28, 1974, Ser. No. 501,440

Claims priority, application United Kingdom, Sept. 7, 1973, 42223/73

Int. Cl.² C10B *57/04*, *1/04*

U.S. Cl. 202—117 **4 Claims**



1. A vessel for the pyrolysis treatment of waste materials such as garbage or other domestic refuse, sewage sludge, plastics and rubber and having:

a first inlet for said waste materials in a first part of the wall of said vessel;

a first outlet for said waste materials after treatment in a second and opposite part of the wall of said vessel;

said vessel walls defining between said first inlet and outlet a first path for the progress of said material through said vessel;

the cross-section of said first path being of at least undiminishing area on proceeding along said first path from said first inlet to said first outlet;

a second inlet for hot gas to effect said pyrolysis including a first grate mounted in said vessel wall;

said second inlet being located in a third part of said vessel wall;

a second outlet for spent gas including a-second grate mounted in a fourth part of said vessel wall opposite said third part;

said second inlet and second outlet constituting the ends of a second path for the progress of pyrolysing gas through said vessel, the cross-sectional area of said first path being of increasing cross-sectional area at least from said first inlet to the region at the intersection of said first and second paths;

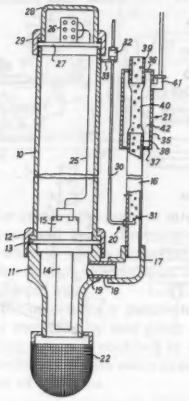
said first and second paths lying substantially at right angles to each other and intersecting within said vessel, and

riddling means located for contacting said material travelling along said first path, and for disturbing said material travelling along said first path so that it may resume travel after jamming including means for mounting at least one of said grates for oscillatory movement relative to the material travelling along said first path and means for oscillating the grate mounted for oscillatory movement.

3,962,046
METHOD AND APPARATUS FOR TESTING PROPERTIES OF LIQUIDS

Charles Alfred Morrison, Isleworth, England, assignor to George Kent Limited, Luton, England

Filed July 24, 1974, Ser. No. 491,511
Claims priority, application United Kingdom, July 27, 1973, 35797/73; Nov. 26, 1973, 54777/73
Int. Cl.² G01N 27/46
U.S. Cl. 204—1 T **4 Claims**



1. A method of measuring a property of liquid in a storage tank, reservoir or river by means of an electro-chemical probe adapted when immersed in the liquid to provide an electrical signal representative of said property of the liquid, comprising locating said probe in an open-ended duct having at least a portion thereof immersed in the liquid and extending continuously upwards towards one end of the duct, injecting into said portion of the duct a gaseous fluid having known properties to which said probe is responsive, the gaseous fluid rising up the said portion of the duct and thereby entraining the liquid in the duct and discharging the liquid through said one end of the duct to cause a continuous stream of the liquid to flow past the probe, the point of injection of said gaseous fluid into the duct being downstream of the probe relative to the direction of flow of liquid through the duct, periodically closing said one end of the duct while continuing injection of said gaseous fluid, so that the gaseous fluid displaces the liquid around said probe and the gaseous fluid comes into contact with the probe, and then co-relating the output of the probe with the known properties of the gaseous fluid to calibrate the apparatus.

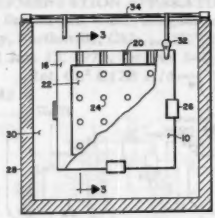
3,962,047
METHOD FOR SELECTIVELY CONTROLLING PLATING THICKNESSES

Robert Wagner, Scottsdale, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Mar. 31, 1975, Ser. No. 563,555
Int. Cl.² C25D 5/02, 7/00
U.S. Cl. 204—15 **9 Claims**

1. A method for selectively controlling the plating thickness on opposing sides of a substrate which comprises:

providing an assembly comprising said substrate having first and second opposing surfaces, a first body having a plurality of apertures therein, and a second body disposed between said substrate and said first body and contiguous with the first surface of said substrate, said second body sealing said substrate and said first body, said second body having a first opening therein at least coextensive with the area to be plated on the first surface of said substrate and further including a plurality of second openings disposed parallel to said substrate and extending from the first opening through said second body along one side thereof;

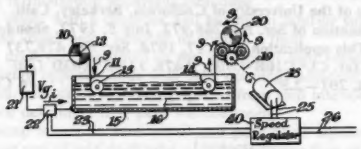


placing said assembly in a plating bath having a top surface so that said second openings are perpendicular to the top surface of the bath and plating essentially simultaneously on the first and second surfaces of said substrate.

3,962,048
METHOD FOR FORMING A UNIFORM OXIDE FILM ON A VALVE METAL

Curtiss M. Gilbert; Richard A. Bemis, and Norman D. Schulze, all of North Adams, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of Ser. No. 434,716, Jan. 18, 1974, abandoned. This application Jan. 8, 1975, Ser. No. 539,360
Int. Cl.² C25D 7/06, 11/02, 17/00, 21/02
U.S. Cl. 204—28 **13 Claims**



1. A method for continuously forming a uniform oxide film on a valve-metal surface comprising:

a. passing continuously through a liquid electrolyte a material having a valve metal surface;

b. applying a constant d.c. voltage between said material and an electrode in fluid contact with said electrolyte; and

c. varying the speed of said passing to maintain constant the forming current produced thereby.

3,962,049
PROCESS FOR COLORING ALUMINUM ANODIC OXIDE FILM

Shigeru Ueki, Kasukabe, Japan, assignor to Kabushiki Kaisha Aiden, Tokyo, Japan

Filed May 15, 1972, Ser. No. 253,430
Claims priority, application Japan, May 13, 1971, 46-31535
Int. Cl.² C25D 11/14, 11/22, 11/04
U.S. Cl. 204—35 N **8 Claims**

1. A process for forming a colored anodic oxide film on a base member of aluminum or aluminum alloy, said process comprising applying electrical voltage to an aluminum or aluminum alloy member in an acidic bath at a determinable formation voltage for a pre-determined period of time to form an anodic aoxide film thereon with an inner barrier layer of a pre-determined thickness, reducing the thickness of the barrier layer to a particular value by lowering the voltage applied to said member over a period of 1 to 3 minutes to a value in a range between about two-thirds and one one-hundredth of

the formation voltage and maintaining the voltage at the thus lowered value for an additional predetermined period of time of between 1 to 3 minutes after which the electric power supply is terminated, washing the member with water, and subjecting said member to electrolysis coloring in a coloring electrolyte containing metallic salts, the reduced thickness of the barrier layer to the particular value permitting the formation of a predetermined color density of substantial uniformity in the anodic oxide film.

3,962,050
RECOVERY OF ZINC FROM ZINC CHLORIDE BY FUSED SALT ELECTROLYSIS

Donald E. Shanks, and Frank P. Haver, both of Reno, Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed May 21, 1975, Ser. No. 579,640
Int. Cl.² C25C *3/34*
U.S. Cl. 204—66 **7 Claims**

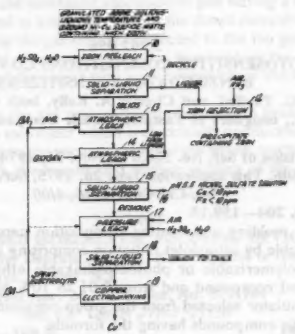
1. A method for recovery of metallic zinc from zinc chloride comprising electrolyzing a molten bath consisting essentially of zinc chloride and an electrolyte consisting of about 50 to 70 mole percent of lithium chloride and about 50 to 30 mole percent of potassium chloride.

3. The method of claim 1 in which the molten bath consists of about 0.6 to 47 mole percent zinc chloride.

3,962,051
ATMOSPHERIC LEACHING OF MATTE CONTAINING IRON

Raymond D. Symens, Arvada; Paul B. Queneau, Golden, and Antonio E. Blandon, Arvada, all of Colo., assignors to Amax Inc., New York, N.Y.

Filed Dec. 26, 1974, Ser. No. 536,383
Int. Cl.² C25C *1/12*
U.S. Cl. 204—108 **10 Claims**



1. A method of leaching comminuted nickeliferous sulfide matte containing about 20% to 75% nickel, about 5% to 50% copper, non-stoichiometric sulfur in the range of over 4% to 20% and over 0.5% to about 20% iron, the sum of the nickel, copper and sulfur contents being at least about 80% which comprises,

providing said matte as a granulated product formed by quenching molten matte from a temperature at least about 10°C above its liquidus-solidus temperature,

comminuting said granulated matte,

subjecting said matte to a first stage atmospheric leaching step to dissolve nickel selectively therefrom by using a spent copper electrolyte solution containing sufficient sulfuric acid having a pH ranging up to about 2 while aerating said solution until the pH of said solution during leaching reaches a level of about 3.5 to 4.5,

then further subjecting said matte to a second stage atmospheric leaching step in said spent copper electrolyte by replacing said aeration with a stronger oxidant selected from the group consisting of oxygen, MnO_4^{-1} and $S_2O_8^{-2}$ to further complete said atmospheric leaching as evidenced by a rise in pH of over about 5, thereby forming a pregnant solution containing nickel and a nickel-copper containing residue,

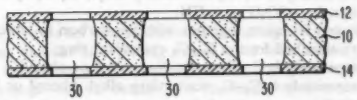
separating the pregnant solution from said residue for nickel recovery,

and subjecting said nickel-copper containing residue to a sulfuric acid leaching step at elevated temperature and pressure to recover metal values therefrom.

3,962,052
PROCESS FOR FORMING APERTURES IN SILICON BODIES

Shakir A. Abbas, Wappingers Falls; Robert C. Dockerty, Highland, and Michael R. Poponiak, Newburgh, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 14, 1975, Ser. No. 567,656
Int. Cl.² C25F *3/00*
U.S. Cl. 204—129.3 **16 Claims**



1. A process for forming a hole through a monocrystalline silicon body comprising:

forming masking layers on opposite sides of said body,

forming opposite registering openings in said masking layers,

introducing an impurity through said openings into said body forming low resistivity regions,

depositing a conductive layer on one side of said body,

anodically etching said body through the opening on the opposite side under conditions that form a region of porous silicon that extends completely through said body, and

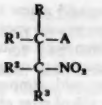
removing the resultant porous region with a silicon etchant.

3,962,053
NITRO GROUP DISPLACEMENT

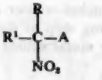
Nathan Kornblum, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Continuation-in-part of Ser. No. 99,696, Dec. 18, 1970, abandoned. This application June 13, 1973, Ser. No. 369,635
Int. Cl.² B01J *1/10*; C07C *121/16, 120/00, 76/02*
U.S. Cl. 204—158 R **4 Claims**

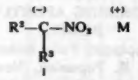
1. A method for the preparation of a compound having the formula



which comprises treating a nitro compound having the formula



with at least one mole of a salt of a nitro compound having the formula



at a temperature within the range of 0° to 50° C. in a polar, aprotic solvent,
wherein A is $-CO_2Q$, $-CN$, $-NO_2$, or

R separately is C_1–C_4 nontertiary alkyl,
C_4–C_6 cycloalkyl or phenyl p-chlorophenyl p-methoxyphenyl, p-tolyl;
R^1 separately is C_1–C_4 nontertiary alkyl, C_4–C_6 cycloalkyl, phenyl, $-CO_2Q$ or $-CN$;
or R and R^1 taken together with the carbon to which they are attached form a C_4–C_6 cycloalkyl ring;
R^2 separately is C_1–C_4 nontertiary alkyl or phenyl;
R^3 separately is C_1–C_4 nontertiary alkyl, phenyl or hydrogen;
or R^2 and R^3 taken together with the carbon to which they are attached form a C_4–C_6 cycloalkyl ring;
M is lithium, sodium, or potassium;
Q is C_1–C_6 alkyl or phenyl; and
Q^1 is phenyl or C_4–C_6 tertiary alkyl.

3. A method as in claim 1 wherein the reaction is conducted in the presence of light in the visible spectrum.

3,962,054

PROCESS FOR THE TREATMENT OF CELLULOSIC TEXTILE MATERIALS

Daniel Wattiez; Roger Chatelin, and Paul Fabre, all of Rouen, France, assignors to Agence National de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Oct. 26, 1973, Ser. No. 409,805

Claims priority, application France, Oct. 27, 1972, 72.38243

Int. Cl.² C08L *1/02*

U.S. Cl. 204—159.12 **13 Claims**

1. A process for the treatment of cellulosic textile materials comprising the following successive steps:

a. grafting the cellulose textile material with an acrylic acid ester monomer or a mixture thereof with a comonomer copolymerizable therewith in the presence of a chemical initiator agent, with a grafting ratio of a least 6% in relation to the weight of the starting cellulose material;

b. effecting irradiation treatment by ionising radiation of the grafted cellulose material obtained in the preceding stage with an irradiation dose of from 0.5 Mrads to 10 mards; and

c. effecting post-irradiation treatment by storage of the irradiated product for a period of from 1 day to 14 days at ambient temperature.

3,962,055

PHOTOSENSITIVE COMPOSITIONS CONTAINING BENZOTHIAZOLE SENSITIZERS

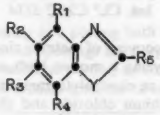
James G. Pacifici, and Charles A. Kelly, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 526,012, Nov. 21, 1974, Pat. No. 3,912,606. This application June 26, 1975, Ser. No. 590,782

Int. Cl.² C08F *2/46, 4/00*

U.S. Cl. 204—159.15 **14 Claims**

1. A molding and coating composition capable of being hardenable by ultraviolet radiation comprising a mixture of a photopolymerizable or photocrosslinkable ethylenically unsaturated compound and from 0.01 to 10% by weight of a photoinitiator selected from the group consisting of aryl heterocyclic compounds having the formula



wherein R_1, R_2, R_3 and R_4 are hydrogen, alkyl, alkoxy, carboxy, alkoxycarbonyl, chlorine, bromine, nitro, amino and can be the same or different;
Y is a sulfur atom;
R_5 is CH_2X, CHX_2, CX_3, aryl-CH_2X; aryl-CHX_2 and aryl-CX_3 where X is chlorine and bromine.

3,962,056

PHOTOSENSITIVE COMPOSITIONS CONTAINING BENZIMIDAZOLE SENSITIZERS

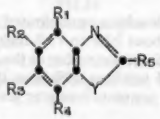
James G. Pacifici, and Charles A. Kelly, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 526,012, Nov. 21, 1974, Pat. No. 3,912,606. This application June 26, 1975, Ser. No. 590,783

Int. Cl.² C08F *2/46, 4/00*

U.S. Cl. 204—159.15 **14 Claims**

1. A molding and coating composition capable of being hardenable by ultraviolet radiation comprising a mixture of a photopolymerizable or photocrosslinkable ethylenically unsaturated compound and from 0.01 to 10% by weight of a photoinitiator selected from the group consisting of aryl heterocyclic compounds having the formula

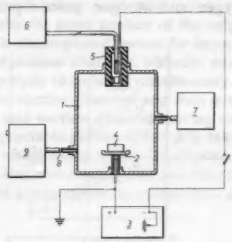


wherein R_1, R_2, R_3 and R_4 are hydrogen, alkyl, alkoxy, carboxy, alkoxycarbonyl chlorine, bromine, nitro, amino and can be the same or different;
Y is a nitrogen atom containing an unsubstituted or substituted lower alkyl group having 1 to 12 carbon atoms or an aryl group or substituted aryl group having 6 to 18 carbon atoms;
R_5 is CH_2X, CHX_2, CX_3, aryl-CH_2X; aryl-CHX_2 and aryl-CX_3 where X is chlorine and bromine.

3,962,057
METHOD OF IMPARTING CONTRAST TO A MICROSCOPE OBJECT

Günter Bartz, Wetzlor, Germany, assignor to Ernst Leitz G.m.b.H.

Division of Ser. No. 262,082, June 12, 1972, Pat. No. 3,859,535. This application June 7, 1974, Ser. No. 477,188
Claims priority, application Germany, June 21, 1971, 2130605
Int. Cl.² B01K 1/00
U.S. Cl. 204—164 5 Claims



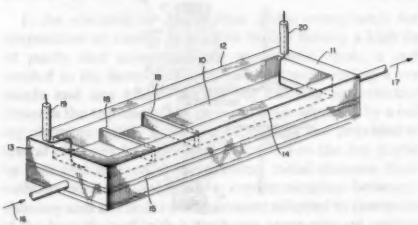
1. A method of imparting contrast to a surface portion of an object to be investigated microscopically, comprising the steps of:

a. introducing the object into a non-grounded vacuum chamber;
b. connecting the object to the positive pole of a regulatable high voltage direct current source;
c. evacuating the chamber to a partial vacuum;
d. bombarding a surface portion of the object with a combined electron-ion gun of the gas discharging type mounted in the wall of the vacuum chamber opposite the object, said combined electron-ion gun having a cathode connected to a negative pole of the direct current source;
e. regulating the gas source connected to the ion gun of the combined electron-ion gun for bombarding the surface portion of the object with a gas concentrated electron-ion beam;
f. adjusting the gas concentrated electron-ion beam to impinge on the object which is electrically conducting; and
g. feeding into the vacuum chamber gas which reacts chemically with the bombarded surface portion of the object.

3,962,058
FLAT BED ISOELECTRIC FOCUSING DEVICE

William Donner Denckla, Tenafly, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 24, 1975, Ser. No. 571,161
Int. Cl.² G01N 27/40, 27/26
U.S. Cl. 204—180 R 14 Claims

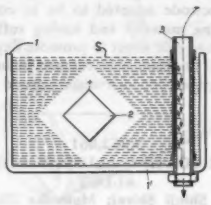


1. A flat bed isoelectric focusing device comprising a rectangular separation chamber defined by two side walls, two end walls and a bottom wall wherein the length to width rates of said separation chamber is at least 15:1 and the height of said side and end walls is from 2 to 4 mm; said bottom wall being provided with at least ten symmetrically spaced baffle means, said baffle means extending from one side wall to the other in a plane perpendicular to the longitudinal axis of said separation chamber and having a height of about ½ the height of said side and end walls; and electrode means in operative relationship with said separaton chamber.

3,962,059
PROCESS AND DEVICE FOR ELECTROPHORETICALLY PLATING METAL PARTS

Friedel Kaup, Gutersloh, and Heinrich Warnke, Marienfeld, both of Germany, assignors to Miele & Cie., Guttersloh, Germany

Filed Jan. 6, 1975, Ser. No. 538,476
Claims priority, application Germany, Jan. 8, 1974, 2400705
Int. Cl.² C25D 13/02
U.S. Cl. 204—181 8 Claims

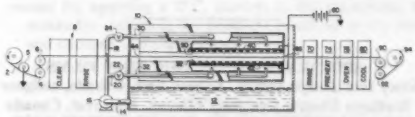


1. A process for electrophoretically plating metal parts with vitreous enamel in a plating vessel filled with a slurry, said vessel containing a holow cathode whose interior is connected by openings with its outside, the openings being covered on the outside by a membrane, and draining means being provided for said cathode for practically completely removing water and other liquids from the interior of the same.

3,962,060
CONTINUOUS ELECTRODEPOSITION OF COATING MATERIAL ON METAL SHEET STOCK

Peter Brasko; Daniel E. Festa, both of New Kensington, Pa., and Kenneth E. Buse, Davenport, Iowa, assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 23, 1974, Ser. No. 517,327
Int. Cl.² C25D 13/06, 13/16
U.S. Cl. 204—181 10 Claims



1. A continuous system for electrodeposition of coating material on metal sheet stock which comprises:

a. uncoiling and cleaning the sheet;
b. passing the sheet in a substantially straight line through coating, baking and cooling stations; and
c. supporting the sheet in said substantially straight position in the coating station by passing the sheet through a transient bath in said coating station in which streams of liquid coating material provide impinging currents respectively on the opposite surfaces of said sheet, said liquid coating material being in electrical communication with at least one charged electrode maintained at a suffi-

cient potential with respect to said metal sheet to promote electrophoretic coating of said sheet by said liquid coating material, and said streams being adjustable to provide positioning and support of said sheet therebetween.

10. An apparatus for electrodeposition of coating on continuous sheet, said apparatus comprising:

a. means for uncoiling and cleaning said sheet;

b. means for passing said sheet in a substantially straight line through:

1. a coating station, said station adapted to include a transient bath therein;
2. a baking station; and
3. a cooling station;

c. means for supporting said sheet in said substantially straight position while immersed in said transient bath, said means comprising nozzles adapted for adjustably directing flow of liquid coating material against opposite surfaces of said sheet;

d. means for coating said sheet with said liquid coating material, said coating means comprising at least one charged electrode adapted to be in contact with said liquid coating material and having sufficient potential with respect to said sheet to promote deposition of coating material thereon and further including insulation means interposed between said electrode and said sheet.

3,962,061
PROCESS FOR COATING ALUMINUM OR ALUMINUM ALLOY

Norio Nikaido; Shinji Shirai; Mototaka Iihashi, and Sueo Umemoto, all of Hiratsuka, Japan, assignors to Kansai Paint Company, Ltd. and Fuji Sashi Industries Limited, both of, Japan

Filed Nov. 11, 1974, Ser. No. 522,878

Claims priority, application Japan, Nov. 20, 1973, 48-131096

Int. Cl.² C25D *13/06, 13/10, 13/20*

U.S. Cl. 204—181 **25 Claims**

1. A process for coating an aluminum or aluminum alloy comprising the steps of subjecting aluminum or aluminum alloy to boehmite treatment or chemical conversion treatment, conducting electrolysis using the resulting aluminum or aluminum alloy as an electrode in an aqueous solution of a water-soluble salt of at least one oxyacid, and thereafter coating electrophoretically the aluminum or aluminum alloy with an aqueous organic coating composition containing a binder resin and a water-soluble salt of at least one oxyacid to form a resin layer, said oxyacid contained in the aqueous solution and aqueous organic coating composition being at least one oxyacid selected from the group consisting of silicic acid, boric acid, phosphoric acid, molybdic acid, vanadic acid, permanganic acid, stannic acid and tungstic acid.

3,962,062
SPUTTERED DIELECTRIC THIN FILMS

Sidney Ivor Joseph Ingrey, Aylmer East, Canada, assignor to Northern Electric Company Limited, Montreal, Canada

Filed Dec. 9, 1974, Ser. No. 530,849

Int. Cl.² C23C *15/00;* **G02B** *5/14, 5/28;* **H01G** *4/08*

U.S. Cl. 204—192 **10 Claims**

1. A method of sputtering a thin dielectric film containing one of tantalum and niobium in a gaseous atmosphere consisting of nitrogen and oxygen, comprising:

positioning a substrate on a holder in a sealable chamber;

positioning a cathode in said chamber, said cathode made of material to be sputtered;

evacuating the chamber to a predetermined high vacuum;

feeding oxygen and nitrogen into the chamber, and maintaining a flow of said gases through the chamber;

adjusting the flow of said gases to give a predetermined pressure in the chamber;

varying the flows of said gases as necessary to give a predetermined ratio of said gases in the chamber;

moving said substrate into sputtering position relative to said cathode;

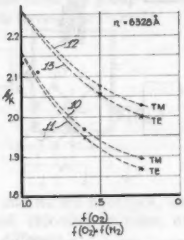
sputtering a thin dielectric film on said substrate.

8. A method of sputtering a thin dielectric film containing one of tantalum and niobium, in an atmosphere consisting of nitrogen and oxygen, said film having predetermined dielectric properties comprising:

positioning a substrate in a chamber and providing a cathode composed of one of tantalum and niobium;

evacuating said chamber to a predetermined vacuum;

feeding oxygen and nitrogen gases separately into said chamber;



adjusting the flows of oxygen and nitrogen to give a predetermined pressure in said chamber and varying the relative flows to give a predetermined ratio of said gases in the chamber; and

sputtering a thin film containing said one of tantalum and niobium on said substrate to form a thin film having a predetermined ratio of oxygen to nitrogen included therein to give predetermined dielectric property.

10. A method as claimed in claim **8** including varying the relative flows of oxygen and nitrogen in a stepwise manner at predetermined time intervals and by predetermined amounts, during sputtering, and forming a thin film composed of a series of thin layers, each layer having a predetermined ratio of oxygen to nitrogen included therein to give a dielectric property which varies in a predetermined manner from the oxygen to nitrogen ratio and dielectric property of the preceding layer.

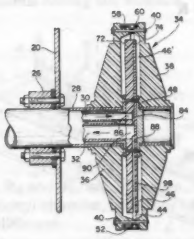
3,962,063
SELECTIVE PLATING APPARATUS

Ashok R. Hingorany, North Attleboro, Mass., assignor to Advanced Materials Systems, Inc., North Attleboro, Mass.

Filed Dec. 18, 1974, Ser. No. 533,816

Int. Cl.² C25D *19/00, 17/00*

U.S. Cl. 204—206 **9 Claims**



1. Continuous selective plating apparatus for electroplating metal on a metallic strip, said apparatus comprising a rotatably mounted hollow wheel having a slot extending around the periphery thereof, said slot communicating with the hollow

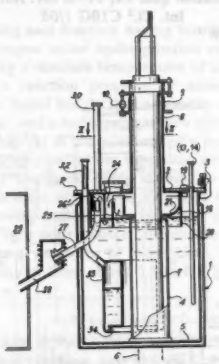
interior of said wheel, means for maintaining a metal strip to be plated in engagement against a portion of the periphery of said wheel whereby the aforesaid slot for said peripheral portion is sealed closed by said strip, means for advancing said strip and rotating said wheel, fixed, nonrotatable distribution means mounted within said wheel comprising electrolysis and suction chambers extending radially toward, but terminating short of, said peripheral wheel portion, said chambers being open at their outer ends, means for continuously feeding an electrolyte to said electrolysis chamber and forcing same outwardly therethrough into contact with the adjacent exposed inner surface of said strip, anode means associated with said electrolysis chamber, said strip being connected as a cathode, whereby the inner surface of the strip contacted by the electrolyte is electroplated, means for imparting a negative pressure to said suction chamber, whereby excess electrolyte from said electrolysis chamber is continuously drawn into the open end of said suction chamber and then is evacuated from the apparatus, said suction chamber having no anode means whereby no appreciable plating of the strip takes place at that location, said wheel being vertically disposed, said suction chamber extending downwardly and said electrolysis chamber being located in juxtaposition to said suction chamber.

3,962,064

ELECTROLYZER AND A METHOD FOR THE PRODUCTION OF READILY OXYDIZABLE METALS IN A STATE OF HIGH PURITY

Albert Brut, Bollene; Gerard Nave, Miramas; Jean-Pierre Deleuil, Salon; Jean-Claude Brun, Miramas, and Yves Martin, Bordeaux-Cauderan, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sept. 13, 1974, Ser. No. 503,928
Int. Cl.² C25C *1/02, 7/08*
U.S. Cl. 204—245 **5 Claims**



1. An electrolyzer for molten metal compounds for the preparation of readily oxidizable metals having a high degree of purity and comprising an electrolytic tank, a cathode welded to the bottom of said tank and surrounding a vertical anode and any known means for carrying out electrolysis, wherein the top end of the cathode is surmounted by a collecting chamber rigidly fixed to a coverplate and provided with a lateral chimney having a recess formed in the top portion of its wall and located at the greatest radial distance from the cathode so as to establish a communication between said chimney and a transfer compartment adapted to communicate at the base thereof with a discharge compartment maintained in an inert atmosphere and provided at the top portion thereof with a chimney which surrounds a metal discharge tube, an expansion chamber containing electrolyte in communication with the electrolyte of the tank and supplied periodically with air by a timing system which also controls the level of electrolyte so that it should move down from a top level at which the metal is poured-off at the level of said recess and at the level of said discharge tube, to a bottom level at which said metal passes from the transfer compartment to the discharge compartment

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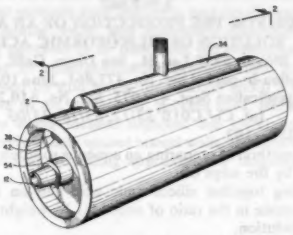
3,962,065

CHLORINE GAS OR HYPOCHLORITE PRODUCING APPARATUS

Frank J. Scoville, 4646 South 3075 East, Salt Lake City, Utah 84117

Continuation-in-part of Ser. No. 473,678, May 28, 1974, abandoned. This application Apr. 14, 1975, Ser. No. 567,681
Int. Cl.² C25B *1/14, 1/16, 1/26*
U.S. Cl. 204—256 **13 Claims**



1. Apparatus for producing chlorine gas or a hypochlorite compound comprising

a housing,

one or more hollow tubes disposed in the housing and having a plurality of apertures spaced along the length of each tube, a plurality of carbon plate electrodes arranged in series in said housing, each having a hole or holes therein for receiving a tube or tubes therethrough, the planes defined by the plates being substantially parallel with each other and perpendicular with the tube or tubes, said plates being spaced to define chambers between adjacent plates, said chambers being located over one or more apertures in the tube or tubes,

a plurality of chloride ion permeable membranes, each disposed in a different one of said chambers to divide said one chamber into an anode compartment and a cathode compartment,

means for supplying an alkali or alkaline earth chloride solution to one hollow tube for transport to the chambers,

means for applying a D.C. current to the electrodes, and

means for collecting the products produced in the anode and cathode compartments.

3,962,066

RESILIENT LINER FOR AN ELECTROLYTIC CELL

Donald B. Barber, Los Angeles; Paul L. Everett, South Gate; Ivar Nou, North Hollywood; James Struebing, La Crescenta, and William Greenbecker, Long Beach, all of Calif., assignors to Barber-Webb, Los Angeles, Calif.

Filed Jan. 30, 1974, Ser. No. 437,965
Int. Cl.² C25B *9/00*; B32B *3/00*
U.S. Cl. 204—279 **1 Claim**

1. A resilient liner for an electrolytic cell comprising

a one-piece, resilient layer, said layer being impervious to electrolytes; and

a plurality of protrusions disposed on at least a portion of the exterior surface of said layer, said protrusions being conical in shape and providing passageways between said

layer and the cell for drainage of electrolytes trapped therebetween, said conical protrusions having a height to

base diameter ratio of approximately one-third to facilitate the fabrication of the liner.

3,962,067

PROCESS FOR THE PRODUCTION OF AN AQUEOUS SOLUTION OF SILICOFORMIC ACID

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 477,861, June 10, 1974. This application Sept. 4, 1975, Ser. No. 610,272

Int. Cl.[2] C01B *33/12, 33/18, 33/00*

U.S. Cl. 252—182 **5 Claims**

1. The method of preparing an aqueous solution of silicoformic acid by the steps of:

a. mixing together silicoformic acid and an alkali metal hydroxide in the ratio of about 5:1 by weight in an aqueous solution,

b. heating the said mixture to about 60°–100° C,

c. stirring the said mixture for about 10–20 minutes, thereby

d. preparing an aqueous solution of silicoformic acid.

3,962,068

METAL ANODE FOR ELECTROCHEMICAL PROCESSES

Dieter Zöllner; Christine Zöllner, both of Schwaig near Nurnberg, and Konrad Koziol, Rothenbach a. d. Pegnitz, all of Germany, assignors to Messrs. C. Conradty, Germany

Filed Mar. 13, 1974, Ser. No. 450,834

Claims priority, application Germany, Mar. 14, 1973, 2312563

Int. Cl.[2] C25B *11/08;* **B01K** *1/00;* **C25B** *1/00*

U.S. Cl. 204—290 F **6 Claims**

1. Metal anode for electrochemical processes, comprising a metal resistant to the electrolysis medium and an active cover layer on the surface of said metal consisting essentially of a crystalline structure of the type Me_A (I) $_{approx.\ 0.4}$ Me_B (I)$_{approx.\ 0.1}$ Pt_3O_4, where Me_A represents Li, Na, K, and Me_B represents Tl and Ag.

3,962,069

SYSTEM FOR TREATING SLUDGE

Kiyoshi Inoue, Tokyo, and Akihiko Shimizu, Isehara, both of Japan, assignors to Inoue-Japan Research Inc., Yokohama, Japan

Filed Sept. 23, 1974, Ser. No. 508,611

Claims priority, application Japan, Sept. 21, 1973, 48-105933; Sept. 21, 1973, 48-105934; Feb. 7, 1974, 49-14883; Feb. 15, 1974, 49-18831

Int. Cl.[2] B01D *13/02*

U.S. Cl. 204—300 R **9 Claims**

1. A system for treating sludge comprising:

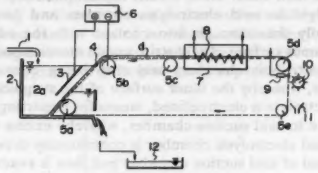
a vessel for receiving a bath of the sludge;

an electrically conductive member having an endless and screen-like perforated surface continuously displaceable through and outside of said bath along a predetermined path and forming a first electrode;

means for displacing said surface along said predetermined path;

a second electrode spacedly juxtaposed with said first electrode in said bath;

a power supply for applying an electric potential across said first and second electrodes to electrochemically effecting flow of water from said sludge through the perforations of said surface and form on the latter a deposit of consolidated sludge within said bath;



means disposed in said path and downstream of the bath for removing said deposit from said surface for disposal or reclamation; and

means for detecting the water content of said deposit on said surface carried from said bath to produce an electrical signal indicative of the detected value and means responsive to said signal for controlling said potential source so as to maintain the water content of said deposit at a desired value.

3,962,070

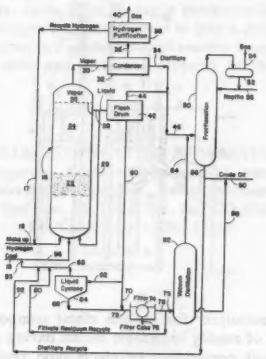
H-COAL PROCESS: SLURRY OIL RECYCLE SYSTEM

Harold H. Stotler, Westfield, N.J., assignor to Hydrocarbon Research, Inc., Morristown, N.J.

Continuation of Ser. No. 214,958, Jan. 3, 1972, abandoned. This application Jan. 14, 1974, Ser. No. 433,198

Int. Cl.[2] C10G *1/08*

U.S. Cl. 208—10 **2 Claims**



1. In a process for the hydrogenation of coal wherein particulate coal is admixed with a liquid hydrocarbon to form a coal-oil slurry which is passed with hydrogen through a reaction zone under hydrogenation temperature and pressure conditions and the coal is hydrogenated to produce hydrocarbon products including a liquid residuum having unconverted processed solids contained therein and wherein the reactor liquid residuum concentration is maximized to reduce the yield of liquid residuum by recycling to the reaction zone a portion of said liquid residuum in the coal-oil slurry, and wherein the solids concentration in the reactor liquid is main-

tained below 20 weight percent, the improvement which comprises:

1. removing the coarser particulate solids from at least part of the recycled residuum stream by liquid cyclone separation;
2. recycling the overhead stream from said liquid cyclone separation step to the reaction zone;
3. removing by filtering finer particulate solids from an additional liquid residuum stream recycled to the reaction zone and also providing a net filtrate liquid stream;
4. subjecting the net filtrate liquid to a distillation step to produce hydrocarbon vapor and liquid streams; and
5. combining the liquid from said distillation with a liquid resulting from condensation and fractionation of the overhead vapor from the reaction zone to produce a synthetic crude oil.

3,962,071

PROCESS FOR PRODUCING LUBRICATING OILS

Takuji Itoh; Tadashi Miura, and Ikuo Akitsuki, all of Ohi, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1974, Ser. No. 469,417
Claims priority, application Japan, May 19, 1973, 48-55765
Int. Cl.² C10G *37/06, 23/04*
U.S. Cl. 208—58 **7 Claims**

1. A process for producing lubricating oils of enhanced photostability comprising the following steps in combination:

i. hydrocracking a hydrocarbon oil having a kinematic viscosity of more than about 3 cst. at 98.9°C. over a hydrocracking catalyst under hydrocracking reaction conditions thereby producing a hydrocrackate product containing more than about 50 volume % of hydrocarbon oil fractions having lubricating oil viscosity;

ii. fractionating said hydrocrackate to obtain at least one hydrocarbon oil fraction having lubricating oil viscosity; and

iii. contacting said fraction having lubricating oil viscosity with hydrogen under hydrogenation reaction conditions comprising a reaction temperature of from about 180° to 300°C., a reaction pressure of more than about 10 kg/cm², a liquid hourly space velocity of less than about 10 V/hr/V, and a hydrogen gas flow rate of from about 30 to 3000 Nm³/kl in the presence of a hydrogenation catalyst comprising palladium supported on a silicacontaining refractory inorganic oxide carrier in which the silica content is from about 5 to less than 40 weight %, said carrier having a specific surface area of from about 100 to 500 m²/g, a pore volume of from about 0.5 to 1.2 ml/g, an average pore radius of from about 30 to 120A and a bulk density of from about 0.5 to 0.7 g/ml.

3,962,072

AIR SEPARATOR APPARATUS

Barry Ramacher, Stockton, and Marvin L. Pack, Linden, both of Calif., assignors to Ramacher Manufacturing Company, Linden, Calif.

Division of Ser. No. 381,150, July 20, 1973, Pat. No. 3,872,657. This application Jan. 3, 1975, Ser. No. 538,357
Int. Cl.² B07B *4/02*
U.S. Cl. 209—140 **3 Claims**

1. An air separator apparatus comprising:

a. an elongated fore to aft frame;

b. a primary feed conveyor supported on said frame and extending upwardly and rearwardly from a lower forward end to an elevated after end, said primary feed conveyor having a predetermined transverse width;

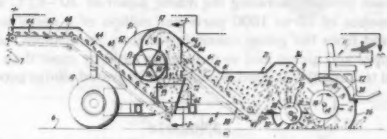
c. means defining a substantially vertical air column mounted on said frame, said means extending between an upper end and a lower end and including a forward wall having a transverse opening located adjacent said elevated after end of said primary feed conveyor, said transverse opening extending the width of said primary feed conveyor to receive the material discharging therefrom, said means also including an after wall and a pair of lateral walls, said lateral walls being spaced apart a distance substantially equal to said predetermined width of said primary feed conveyor;

d. a rotary fan mounted on said frame adjacent said means said fan including an inlet and an outlet, said outlet discharging to the atmosphere;

e. a duct opening into said upper end and in communication with said inlet of said fan for inducing air flow in a vertically upward direction from said lower end toward said upper end thereof and into collision with the material entering said air column through said opening for the removal of light debris from the heavier desired fraction of the material;

f. a secondary discharge conveyor supported on said frame and extending upwardly and rearwardly from a forward end located below and spaced from said lower end, said secondary discharge conveyor having a relatively narrow width with respect to said predetermined transverse width of said primary feed conveyor and the distance between said lateral walls, said secondary discharge conveyor being pervious to air flow from the atmosphere;

g. a pair of counter-rotating, power-driven, guide drums mounted on said frame for rotation about a spaced pair of fore to aft, horizontal, parallel axes, the tops of said drums being located adjacent the lower ends of said relatively widely spaced lateral walls, the adjacent sides of said drums extending approximately tangentially to the



edges of said relatively narrow secondary discharge conveyor and defining a venturi throat for air flowing upwardly from said forward end of said secondary discharge conveyor located below said guide drums;

h. a base plate mounted on said frame and extending downwardly from a location adjacent the lower end of said forward wall to a location adjacent the forward end of said secondary discharge conveyor, said base plate defining, with the adjacent surfaces of said guide drums, a substantially vertical downwardly converging passageway capable of funneling the material emerging from said lower end into a relatively narrow stream vertically descending through said venturi throat and onto said relatively narrow secondary discharge conveyor; and,

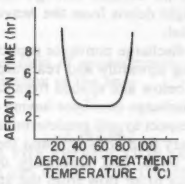
i. a horizontal, transversely oriented, drum-like housing interposed between said duct and said fan inlet, the bottom portion of said housing being located aft of said guide drums and above said secondary discharge conveyor, said housing being spaced from said secondary discharge conveyor to provide, with the after portions of said guide drums, an approximately horizontal path for air inflow into collision with the vertically descending and narrowing stream of material passing through said venturi throat, said horizontal flow of air then curving upwardly to supply said air column and eventually to flow through said fan to discharge to the atmosphere with entrained light debris separated from the heavier desired fraction in the material emerging from said opening and in said narrowing stream of material descending between said guide drums.

3,962,073

PROCESS FOR TREATING A WASTE LIQUID OF HYDROSULFITE

Yoshio Yoshikawa, Ushiku; Sadao Otsuka, Nagareyama; Akira Amemiya, and Toshio Komatsu, both of Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Aug. 9, 1974, Ser. No. 496,090
Claims priority, application Japan, Aug. 15, 1973, 48-91435
Int. Cl.² C02C 1/06
U.S. Cl. 210—7 8 Claims



1. In a process for treating a waste liquor from the final stage of a process for producing anhydrous hydrosulfite wherein the waste liquor includes sodium thiosulfate, sodium sulfite, sodium acid sulfite, sodium formate, and inorganic sulfur reducing compounds, the improvement which comprises diluting the waste liquor with water to adjust the ratio of 100 percent times the weight of iodine consumed by the waste liquor divided by the weight of waste liquor to one to fifteen percent, aerating the waste liquor at 30°–85°C in the presence of 10 to 1000 parts per million of a metal ion selected from the group consisting of iron, manganese, cobalt, copper and nickel ions to reduce the ratio by more than 50%, and treating the aerated liquor by an activated sludge process.

3,962,074

PROCESS FOR SEPARATING ACRYLIC ACID FROM AQUEOUS SOLUTIONS

Wilhelm Karl Schropp, Luetzelsachsen, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed May 6, 1974, Ser. No. 467,255
Claims priority, application Germany, May 9, 1973, 2323328
Int. Cl.² B01D 11/04
U.S. Cl. 210—21 6 Claims

1. In a process for extracting acrylic acid from an aqueous solution thereof which comprises extracting said solution with an organic solvent and separating the organic phase from the aqueous raffinate, the improvement wherein the aqueous acrylic acid solution is extracted with a mixture of butanol and butyl acrylate, which mixture is saturated with water and in which mixture the weight ratio of butanol to butyl acrylate is from 1:3 to 10:1.

3,962,075

HEMO DIALYZER EMPLOYING TWO DIALYSATE SOLUTIONS

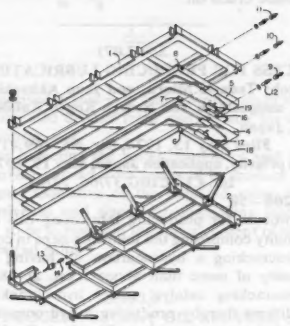
Sheldon L. Fialkoff, Brooklyn, N.Y., and Roy Alan Ackerman, Cambridge, Mass., assignors to Tri-Flo Research Laboratories, Ltd., Jamaica, N.Y.

Continuation-in-part of Ser. No. 395,675, Sept. 10, 1973, abandoned. This application Apr. 16, 1974, Ser. No. 461,461
Int. Cl.² B01D 31/00, 13/00
U.S. Cl. 210—22 A 19 Claims

1. A method of purifying blood in which blood is subjected to filtration to remove impurities thereform, said filtration comprising,

exposing blood between two zones, the first zone containing a hypotonic solution with respect to blood constituents, both said zones being separated from said flow of blood by a semi-permeable filtration medium, the hypotonic solution being at a concentration sufficient to remove at least a portion of said blood impurities,

the improvement comprising providing a hypertonic solution in said second zones, said hypertonic solution being hypertonic with respect to said blood constituents other than urea, both said hypertonic and hypotonic solutions



having constituents in common with blood but at concentrations different therefrom to produce a concentration gradient with respect to said constituents, said concentrations being highest in said hypertonic solution and lowest in said hypotonic solution.

whereby said concentration gradient produces an efflux of water from said blood by reason of the osmotic gradient which flow carries with it blood impurities effective to increase the dialysis rate.

3,962,076

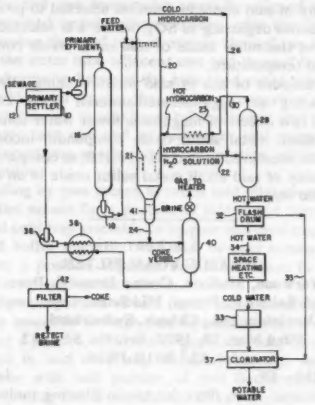
PROCESS FOR CONVERTING AQUEOUS SEWAGE TO POTABLE WATER

Howard V. Hess, Glenham; William F. Franz, Gardiner, and Edward L. Cole, Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 304,160, Nov. 6, 1972, Pat. No. 3,876,538. This application Sept. 11, 1974, Ser. No. 505,127
Int. Cl.² B01D 11/00
U.S. Cl. 210—22 R 10 Claims

1. A process for converting aqueous sewage containing dissolved brine-forming minerals and organic compounds to potable water, and coke, comprising: separating said sewage into a primary sludge consisting of a pumpable slurry and a relatively cool primary effluent containing said minerals; passing said effluent into direct counter-current contact with relatively hot hydrocarbon liquid under a pressure of 1000 to 3000 psi in a contacting zone at a temperature between 600 and 700°F thereby forming a hydrocarbon minerals-free water solution, cooled hydrocarbon and a hot concentrated minerals containing brine solution; separating said hydrocarbon from said water; flashing at least a part of said water and condensing

same for use as potable water; pressurizing said sludge to around 1000 to 3000 psi and injecting said hot brine into said



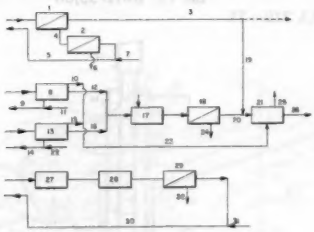
sludge to coke said sludge in the liquid phase to form a reject coker effluent, gases and coke.

3,962,077

PROCESS FOR THE PURIFICATION OF WASTE WATERS

Giorgio Pascarella, Pesaro, and Francesco Salvemini, Fano, both of Italy, assignors to Tecneco S.p.A., Fano (Pesaro), Italy

Filed June 14, 1974, Ser. No. 479,558
Claims priority, application Italy, June 15, 1973, 25392/73
Int. Cl.² B01D *13/00*
U.S. Cl. 210—23 H **5 Claims**



1. A process for the purification of waste waters containing organic and inorganic products which may or may not be ionizable, said waste waters characterized as coming from the regeneration of the anionic and cationic demineralizing resins, the decoloring resins, and the decalcifying resins used for the treatment of the sugar juices in the sugar industry, said process comprising the following steps:

A. feeding said waste waters coming from the regeneration of the decoloring resins to an inverse osmosis section consisting of two stages;

B. feeding waste waters which come from the regeneration of the anionic demineralizing resins to an anodic compartment of one or more electrolytic cells each having two compartments and subjecting said water therein to electrolysis;

C. feeding waters which come from the regeneration of the cationic demineralizing resins to a cathodic compartment of one or more electrolytic cells each having two compartments and subjecting said water therein to electrolysis;

D. feeding waters coming from the regeneration of decalcifying resins to a precipitation treatment with sodium hydroxide, and carbon dioxide, subsequently neutralizing said waters and subjecting them to a final inverse osmosis treatment;

E. mixing and neutralizing the treated waters rich in organic materials from steps B and C hereinabove, where they are not completely demineralized, and then subjecting the waters to an inverse osmosis treatment and thereafter mixing them with treated solution rich in organic substances from step A; and

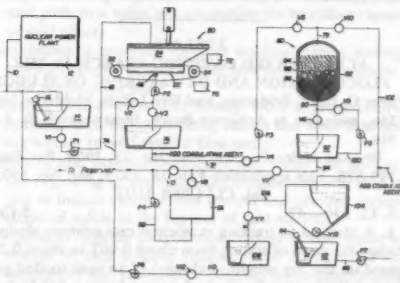
F. feeding treated waters from step E containing organic compounds (organic waters), after having been mixed together, to an evaporator for recovering the dry organic substance.

3,962,078

METHOD AND APPARATUS FOR TREATING LIQUID CONTAMINATED WITH RADIOACTIVE PARTICULATE SOLIDS

Gene Hirs, Birmingham, Mich., assignor to Hydromation Filter Company, Livonia, Mich.

Filed Dec. 13, 1974, Ser. No. 532,418
Int. Cl.² B01D *15/06, 37/00*
U.S. Cl. 210—27 **16 Claims**



1. In a method of removing radioactive particulate contaminants from liquid in a nuclear reactor plant for storage and disposal, the steps of:

flowing a liquid contaminated with radioactive particulate solids from a nuclear reactor through a foraminous medium having openings in the range of from about 0.002 to 0.025 inch accumulating particulate contaminants as a filter cake on the foraminous medium, and passing any non-accumulated particulate contaminants in a partially clarified liquid flow;

flowing the partially clarified liquid through a bed of granular filter medium and accumulating substantially all the previously non-filtered contaminants to provide a clarified liquid suitable for reuse, the filter bed being comprised of granular material having a specific gravity less than about 1.6;

terminating flow through the foraminous medium after that medium has accumulated a filter cake of radioactive particulate contaminants and removing the accumulated, radioactive filter cake for disposal;

terminating flow through the granular filter bed, flowing backwash liquid through the bed in a direction reverse to normal filtration flow, expanding the bed and removing at least a portion of the accumulated particulate contaminants from the granular filter bed;

accumulating the backwash liquid and removed contaminants from the granular filter bed in a reservoir, quiescently maintaining the accumulated backwash liquid and contaminants, and settling at least a part of the contaminants; and

decanting liquid from the reservoir to concentrate the contaminants.

11. A filtration system for removing radioactively contaminated particulate solids from liquid in a nuclear reactor plant, comprising: means for flowing liquid contaminated with radioactive particulate solids from a nuclear ractor through a first filter including a reusable foraminous medium having flow openings between about 0.002 and 0.025 inch in size, the foraminous medium accumulating radioactive contaminants thereon and passing any non-accumulated contaminants in a partially clarified liquid flow; a flow conduit interconnecting the first filter with a second filter including a bed of granular filter medium for accumulating and coalescing substantially all the radioactive particulate contaminants passed through the first filter including a bed of granular filter medium for a clarified liquid suitable for re-use in the nuclear power plant; means for removing the accumulated radioactive contaminants from the foraminous medium; means for flowing backwash liquid through the granular filter bed in a direction reverse to normal filtration flow to expand the bed and remove substantially all the accumulated, coalesced particulate radioactive contaminants therefrom; a reservoir means (a) receiving the backwash liquid with removed radioactive contaminants and (b) retaining same in a quiescent pool to settle the radioactive particulates; means for decanting liquid from the quiescent pool after settling to concentrate the radioactive particulates; and means for removing the settled radioactive particulates from the reservoir after decanting as a concentrated radioactive contaminant waste.

3,962,079
ACID TREATED CATIONIC STARCH IN THE FLOCCULATION AND DEWATERING OF SLUDGE

Walter G. Hunt, Bridgeton, and Ray J. Belz, Mehlville, both of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Division of Ser. No. 434,998, Jan. 21, 1974, Pat. No. 3,901,878. This application Feb. 18, 1975, Ser. No. 550,599
Int. Cl.² C08B *31/12*
U.S. Cl. 210—47 5 Claims

1. A method of treating municipal raw primary sludge including the steps of adding from about 0.007 to about 0.200% (based on the dry weight of sludge) of an acid treated gelatinized cationic starch ether of amine butene halide having about 0.15 to about 0.25 degree of substitution of amine butene halide and a fluidity of about 30 to about 50 ml., to said municipal raw primary sludge, and dewatering to below about 70% moisture.

3,962,080
SODIUM SULFUR OXIDES WASTES DISPOSAL PROCESS

Jacques M. Dulin, Libertyville, Ill.; Edward C. Rosar, Lakewood, Colo.; Russell B. Bennett, Worthington; Harvey S. Rosenberg, Columbus, both of Ohio, and Joseph M. Genco, Orono, Maine, assignors to Industrial Resources, Inc., Chicago, Ill.

Filed Oct. 31, 1973, Ser. No. 411,366
Int. Cl.² C02C *5/02*
U.S. Cl. 210—59 38 Claims

1. A water pollution control process for reducing the solubility of alkali metal sulfur oxides industrial process wastes comprising the steps of:

a. mixing said industrial process waste containing an alkali metal sulfur oxide selected from sodium, potassium, and lithium, sulfite, sulfate, and mixtures thereof, with an effective amount of an alumina and silica-containing ash selected from fly ash, bottom ash, and mixtures thereof to produce a mixture;

b. forming an agglomerate consisting of individual particles of said mixture;

c. heating said mixture-containing agglomerate to a temperature within the range of about 1000–2300°F for a time sufficient to sinter said agglomerate into an integral mass while retaining said agglomerate form with a substantial portion of individual agglomerate particles being fused together by a glassy matrix;

d. said sulfur oxide is in a sulfite state, a sulfate state, or a mixture of said states in amounts selected to produce no substantial degassing as SO_x, where x is selected from 2 or 3, of the sulfur oxide of said sulfur oxide component at said temperature;

e. said amount of ash in said mixture being effective in producing an agglomerated-sintered mass exhibiting about two orders of magnitude lower water solubility of said alkali metal sulfur oxide component incorporated therein, measured as said alkali metal, as compared to the solubility of said alkali metal sulfur oxide in an unincorporated state.

3,962,081
CERAMIC FOAM FILTER

John C. Yarwood, Madison, Conn.; James E. Dore, Ballwin, Mo., and Robert K. Preuss, Middleton, Conn., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

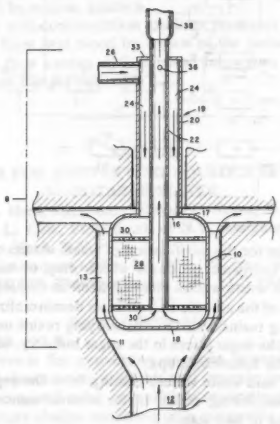
Filed Mar. 28, 1975, Ser. No. 563,213
Int. Cl.² B01D *39/16*
U.S. Cl. 210—69 14 Claims

1. A ceramic foam filter for use in filtering molten metal having an open cell structure characterized by a plurality of interconnected voids surrounded by a web of said ceramic, said filter having an air permeability in the range of from 400 to 8000×10^{-7} cm², a porosity of 0.80 to 0.95, a pore size of 5 to 45 pores per linear inch and a thickness of from ½ 4 inches, said filter having substantial structural uniformity with a plurality of homogeneously distributed pore blockages throughout the foam.

3,962,082
LIQUID METAL COLD TRAP

Rolv Hundal, Greensburg, Pa., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Mar. 28, 1975, Ser. No. 563,273
Int. Cl.² B01D *35/06*
U.S. Cl. 210—71 6 Claims



3. A method of preventing the accumulation of cover gases within the cold trap assembly, which assembly removes impurities from a liquid metal flowing through said cold trap assembly, comprising the steps of:

providing a cold trap assembly consisting of a cold trap container, a baffle assembly or crystallization element in

said container, a container coolant means about said container, a regenerative heat exchanger connected in fluid communication with said cold trap container;

providing the regenerative heat exchanger with one outer tube and one inner tube coaxially aligned to form an elongated annulus therebetween with the liquid metal entering the cold trap container through an inlet means in the outer tube adjacent one end thereof by flowing in said annulus between the inner and outer tubes, and the liquid metal leaving the cold trap container through an outlet means in said inner tube adjacent one end thereof where said one end of said inner and outer tubes are adjacent one another at an end portion of the elongated annulus;

providing by-pass means between said inlet means and said outlet means for a portion of said liquid metal entering said cold trap assembly to by-pass said cold trap container and baffle assembly with said by-pass means extending from a position adjacent said inlet means to a position adjacent said outlet means;

flowing said portion of said liquid metal entering said cold trap assembly through said by-pass means;

flowing a portion of the cover gases that may have accumulated in said cold trap assembly through said by-pass means with said portion of said liquid metal thereby preventing the accumulation of cover gases in the cold trap assembly.

3,962,083

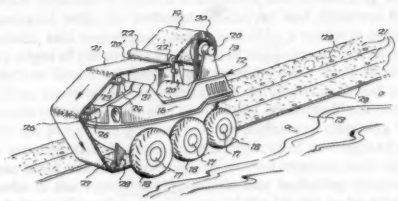
APPARATUS AND METHOD FOR PROTECTING A SHORELINE AGAINST CONTAMINATION FROM AN OIL SPILL

Max Goldman, Latham, N.Y., assignor to RRC International, Inc., Latham, N.Y.

Continuation of Ser. No. 417,478, Nov. 19, 1973, abandoned. This application Feb. 27, 1975, Ser. No. 553,592

Int. Cl.² B01D *41/02*; **C02B** *9/02*; **E02B** *15/04*

U.S. Cl. 210—79 **24 Claims**



1. A method of treating a shoreline against contamination from an oil spill comprising the steps of transporting a web-laying vehicle and oil-absorbing web means to said shoreline, causing said web-laying vehicle to lay said oil-absorbing web means onto said shoreline as a blanket, taking up said oil-absorbing web means after they have been exposed to oil, extracting oil from said web means, storing said extracted oil, and conveying said extracted oil away from said shoreline.

10. A method of treating a shoreline against contamination from an oil spill comprising the steps of transporting oil-absorbing web means to a shoreline, laying said oil-absorbing web means on said shoreline as a blanket, and taking up said oil-absorbing web means after they have been exposed to oil.

3,962,084

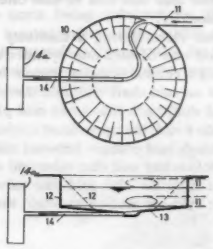
RAIN STORING TANK

Gert Nussbaum, Schulstrasse, 7111 Bitzfled, Germany

Continuation of Ser. No. 370,442, June 15, 1973, abandoned, which is a continuation of Ser. No. 122,974, March 10, 1971, abandoned. This application July 12, 1974, Ser. No. 488,017

Int. Cl.² B01D *21/00*

U.S. Cl. 210—83 **2 Claims**



1. The method of reducing pollution of open waters by controlling the flow of mixed rain water and sewage to a purification plant, comprising the steps of:

establishing a flow path having a flow capacity for directing mixed rain water and sewage to a purification plant having a handling capacity and limiting the flow capacity of said path to a value not exceeding the handling capacity of said plant;

establishing a generally circular holding station having a storing capacity at that end of said flow path opposite to said purification plant;

directing mixed water and sewage from a predetermined drainage area to said holding station and from said holding station to said limited flow path;

directing said polluted mixture of rain water and sewage at the beginning of each rain fall tangentially into said station to induce circular flow thereof and prevent accumulation of solids at the bottom of said station;

temporarily holding the polluted mixture of rain water and sewage at said holding station which exceeds the flow capacity of said limited flow path, up to the storing capacity of said holding station while continuously releasing said polluted mixture of rain water and sewage from the central bottom portion of said holding station to said limited flow path;

discharging any further supply of dilute mixed rain water and sewage exceeding the storing capacity of said holding station and the flow capacity of said limited flow path from said holding station to ambient surroundings whereby only said polluted mixture is directed to said purification plant.

3,962,085

SKIMMER ASSEMBLY

Max Davis Liston, Irvine, and Gerald Paul Frison, Dana Point, both of Calif., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 426,433, Dec. 19, 1973, abandoned. This application Dec. 23, 1974, Ser. No. 535,225

Int. Cl.² B01D *33/00*

U.S. Cl. 210—131 **10 Claims**

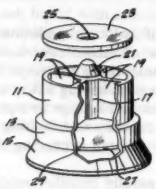
1. A plunger and valve assembly for insertion into the end of a cylinder whereby the cylinder with the assembly may be inserted into a vial to skim off the fluid contents therein, comprising:

a plunger member having dual cylinder sections, joined together in tandem and a central opening therethrough, one cylinder section having a smaller diameter than the other cylinder section and being adapted to be inserted into one end of a cylinder, said other cylinder section having a projecting lip therearound to engage and seal said plunger member with the interior wall of a vial into which said plunger member may be inserted, said other

cylinder section having an annular lip which partially closes said central opening of said plunger member;

radial ribs located within said central opening of said plunger member, said ribs having a shaft extending beyond the end of said one cylinder section, said shaft having a shoulder thereon which is constructed and arranged to be inserted through a central opening of a disc valve to hold the disc on said shaft in engagement therewith between said one end of said one cylinder section and said shoulder;

a circular disc valve having a diameter substantially the same as said end of said one cylinder section, said disc valve having a central opening therein by which said disc is mounted on said shaft and held thereon by said shoulder on said shaft such that when said plunger member is inserted into a vial, the uppermost contents of the vial are passed through said plunger between said end of said one cylinder section and said disc valve and when said plunger is removed from the vial, said disc valve closes said end of said one cylinder section to retain the contents passed



therethrough thereby skimming the uppermost contents of the vial;

a filter disc mounted between said annular lip and said shaft having ribs thereon for filtering the contents skimmed from the vial;

a cylinder having two ends, one end of which said one cylinder section of said plunger member is inserted; and

a tab extending along a diameter of the opening of the other end of said cylinder and intersecting the walls of said cylinder, said tab being connected to the walls of said cylinder at each point of intersection, said tab extending from said other end of said cylinder outwardly to form a projection which may be grasped between the thumb and fingers of an operator of the assembly, whereby said cylinder and plunger may be manually inserted into the vial to skim the uppermost contents thereof, said tab being connected to said cylinder wall such that it may be broken easily therefrom after the vial has been skimmed to prevent interference with the analysis of the contents of said cylinder.

3,962,086

APPARATUS FOR THE SEPARATION OF THE COMPONENTS OF AN AQUEOUS CONCRETE GROUT

Lionello Rossi, Grottaferrata, Italy, assignor to Fogt Industriemaschinenvertretung A.G., Zurich, Switzerland

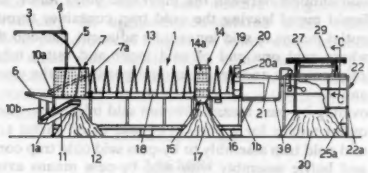
Filed Aug. 13, 1974, Ser. No. 497,101

Claims priority, application Italy, Aug. 31, 1973, 52286/73

Int. Cl.² B01D *21/06*

U.S. Cl. 210—138 **10 Claims**

1. Apparatus for the separation of the components of an aqueous concrete grout which includes gravel and crushed stones, sand, cement and water obtained from the washing with water of concrete receptacles, such as revolving drums of automotive concrete mixers, comprising first and second tanks each having an input and an output operatively connected in series, first separating means mounted in said first tank for separating and discharging the gravel and crushed stones of the aqueous concrete grout, second separating means mounted in said first tank and arranged subsequently of said first separating means for separating and discharging the sand of the aqueous concrete grout, means arranged at the output of said first tank for feeding the cement and water of the aqueous concrete grout to the input of said second tank, third separating means mounted in said second tank for separating and discharging the cement of the aqueous concrete grout, distribution means for conveying the water from said second tank to the concrete receptacles and means at the input of said first tank for receiving the aqueous concrete grout from the concrete receptacles.



3,962,087

IMMERSION FILTER

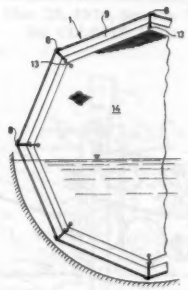
Hans Hartmann, Wiesenweg 175, 8501 Wachendorf, Germany

Filed June 27, 1974, Ser. No. 483,808

Claims priority, application Germany, June 27, 1973, 2332589

Int. Cl.² B01D *33/02*

U.S. Cl. 210—150 **52 Claims**



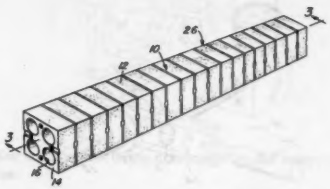
1. An immersion filter arrangement for biologically purifying sewage effluent, the arrangement comprising: a roller cage support structure means for rotation about an axis thereof, a plurality of biological growth accumulation surface means, and suspension means for suspending said growth accumulation surface means within said roller cage support structure means under tension in planes extending substantially parallel to one another, said biological growth accumulation surface means being adapted to be slowly rotated whereby said growth accumulation surface means are alternatively immersed in the sewage effluent and removed therefrom to enrich the biological growth accumulated thereon with oxygen, said biological growth accumulation surface means comprising foils or webs crossing said axis and being suppported by said suspension means at the peripheries of said foils or webs only.

3,962,088

CONCRETE BLOCK ASSEMBLY

Harold L. Kuhlenschmidt, and Floyd E. Kuhlenschmidt, both of Elberfeld, Ind., assignors to Elberfeld Concrete Block Co., Inc. (Entire), Elberfeld, Ind.

Filed Sept. 17, 1974, Ser. No. 506,897
Int. Cl.² E02B 11/00; C02B 3/06
U.S. Cl. 210—170 2 Claims



1. A concrete block drain line forming a drain field of a septic tank sewage disposal system comprising a plurality of identical porous concrete blocks oriented in end-to-end aligned and sealed relation, each block including a plurality of larger openings extending therethrough to form a plurality of longitudinal passageways for effluent flow and adapted to be interconnected at their ends, and tension means extending through small openings in the plurality of blocks for retaining the blocks in assembled sealed relation prior to installation in the drain field, said small openings being disposed symmetrically about the center of the blocks and between said large openings and adjacent the periphery of the block, said tension means being in the form of a plurality of tension rods extending through the small openings in each block with retaining nuts on each end of each rod, the ends of the rod and retaining nuts being received in recesses in the endmost blocks to enable adjacent, aligned assemblies to be disposed in adjacent relation for interconnection, said blocks being of square configuration with the large openings therethrough and small openings therethrough being symmetrically arranged to align the openings in different positions of the blocks relative to each other, said concrete block drain line being in the form of a module to be oriented in end-to-end, aligned relation to similar modules to form a drain field, and connecting means associated with the endmost blocks on said concrete block module, said connecting means including a recess in opposite side edges of the axially innerface of the endmost blocks of the concrete block module and retaining clips each having a portion received in the recess and on the tension rod and a portion extending laterally beyond the concrete block module with the projecting portion adapted to receive clamping bolts for securing the adjacent endmost blocks of two aligned concrete block modules in secure connected relation, each of said blocks in the concrete block drain line including recesses in both faces thereof to enable any of the blocks to be oriented as the endmost blocks and with either face of such blocks faced axially inwardly of the concrete block module.

3,962,089

APPARATUS FOR SOFTENING HARD WATER

Yoshisada Fulukawa, Tokyo, Japan, assignor to Maruyama Mfg. Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1974, Ser. No. 499,330
Claims priority, application Japan, Sept. 26, 1973, 48-108208
Int. Cl.² B01D 29/38
U.S. Cl. 210—191 6 Claims

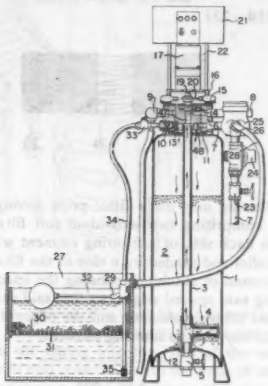
1. An apparatus for softening hard water, comprising:

an upright tank having an upwardly directed opening in the upper end thereof;

a cylindrical sleevelike valve seat fixedly mounted on the upper end of said tank in surrounding relationship to said opening, said valve seat having an inner cylindrical surface defined about a substantially vertical axis;

said valve seat having said first and second ports formed therein and extending radially therethrough, said first and second ports being substantially diametrically opposed and located substantially within a first radial plane which extends perpendicular to the axis of said valve seat;

said valve seat also having third and fourth ports formed therein and extending radially therethrough, said third and fourth ports being substantially diametrically opposed and located substantially within a second radial plane which extends perpendicular to the axis of said valve seat, said second radial plane being axially spaced from said first radial plane;



a soft water pipe, a discharge pipe, a raw water pipe, and a saltwater pipe respectively connected to the outer ends of said first, second, third and fourth ports;

valve means rotatably fitted within valve seat for rotation about said vertical axis, said valve means including a substantially cylindrical valve member disposed within the valve seat and having an outer cylindrical surface disposed in slidable and sealed engagement with said inner cylindrical surface;

said valve member having first passage means extending therethrough, one end of said first passage means terminating in the lower axial end of said valve member for communication with the interior of said tank, and the other end of said first passage means terminating in a first radial opening which extends through said outer cyclindrical surface and is disposed substantially within said first radial plane;

a substantially vertically extending pipe disposed within the tank and having the upper end thereof connected to said valve member for communication with said one end of said first passage means, the lower end of said vertically extending pipe extending into a mass of ion exchange resin disposed within the tank;

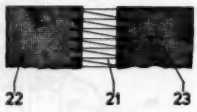
said valve member having second passage means extending therethrough, one end of said second passage means terminating in the lower axial end of said valve member for communication with the interior of said tank, and the other end of said second passage means terminating in a second radial opening which extends through the outer cylindrical surface and is disposed substantially within said second radial plane;

ejector means associated with said fourth port for permitting saltwater to be sucked through said saltwater pipe and supplied into said tank;

said valve set having restricted flow passage means formed therein and connecting said third and fourth ports for permitting raw water to be supplied to said ejector means

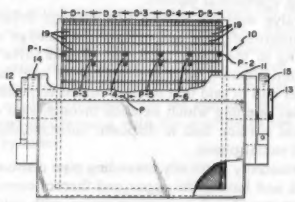
to actuate same;
motor means connected to said valve member for rotating same; and
control means for selectively rotating said motor means and the associated valve member.

3,962,090
FILTER UNIT
Heinz Langer, Hargesheim, Germany, assignor to Seitz-Asbest-Werke Theo & Geo Seitz, Germany
Filed Sept. 12, 1972, Ser. No. 288,298
Claims priority, application Germany, Sept. 13, 1971, 2145661
Int. Cl.[2] B01D 25/12
U.S. Cl. 210—231 2 Claims



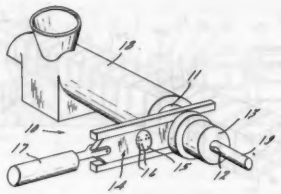
1. A filtering unit for a filter press having vertical filter elements comprising two individual soft filtering layers arranged on each side of a filtering element with longitudinal edges parallel and spaced by a side of the filter element, and a seam formed of stitching spanning the space between and connecting said spaced edges, so that said seam overlies the side of said filtering element and the edges of said layers do not extend beyond the filtering element.

3,962,091
ROTARY DRUM FILTER WITH WIRE DECK, APPARATUS AND METHOD
Frank S. Doria, Easton, Pa., and Victor A. Schinneri, Norwalk, Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.
Continuation of Ser. No. 321,099, Jan. 4, 1973, abandoned.
This application June 11, 1974, Ser. No. 478,220
Int. Cl.[2] B01D 39/10, 33/06
U.S. Cl. 210—232 19 Claims



1. In a rotary drum filter, a filter drum which comprises,
a cylindrical shell,
a multitude of longitudinally extending outwardly directed ribs provided on said shell spaced from one another about the periphery of said shell,
deck wire tension wound across said ribs in windings of predetermined pitch as defined by notches formed upon the top edges of the ribs,
at least one anchoring block for said wire, fixed in relation to said drum, and formed with a slot in the form of a saw cut, and with a depression formed at the bottom of said slot, said saw cut being aligned for receiving said wire while tensioned,
and a screw threaded into both inner sides of said slot, extending substantially radial to the axis of the drum, and when tightened effective to force the wire into said depression while tensioned, thereby fixedly anchoring the same.

3,962,092
SCREEN CHANGER
Ritchey O. Newman, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 10, 1975, Ser. No. 540,289
Int. Cl.[2] B01D 29/02
U.S. Cl. 210—236 5 Claims

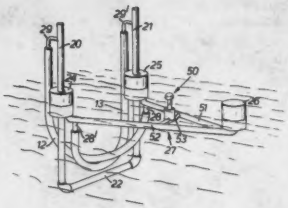


1. A screen changing apparatus, particularly suited and adapted for use in the extrusion of heat-plastified synthetic resinous extrudable material, the apparatus comprising a conduit, the conduit having an upstream end and a downstream end, and a passage therebetween, a plate-like element slidably disposed within the conduit and extending transversely to the passage, first and second recesses defined in the plate-like element, the plate-like element being in sliding engagement with the conduit toward the dowstream end, and when forced toward the downstream end by the force of fluid flowing therethrough, the plate-like element being in sealing engagement therewith, in the region of each of the recesses the plate-like element defining a plurality of passageways providing communication between the upstream and the downstream end of the conduit, means to slidably retain the plate-like element within the conduit and permit selective positioning of the recesses within the conduit, a sealing means disposed within the conduit between the plate-like element and the upstream end of the conduit, the sealing means comprising an annular ring, the annular ring having an internal generally frustoconical surface outwardly divergent toward the upstream end of the conduit, the ring having a generally cylindrical outer surface, the cylindrical outer surface of the sealing ring defining an outwardly facing groove, an O-ring disposed within the groove and the O-ring being in contact with the conduit.

3,962,093
APPARATUS FOR REMOVING CONTAMINANTS FROM THE SURFACE OF A FLUID
Roland Richard Gibson, London, England, assignor to The Glacier Metal Company Limited, Alperton, England
Continuation of Ser. No. 396,869, Sept. 12, 1973, abandoned.
This application Mar. 5, 1975, Ser. No. 555,349
Claims priority, application United Kingdom, Sept. 13, 1972, 42467/72
Int. Cl.[2] E02B 15/04
U.S. Cl. 210—242 S 1 Claim

1. A liquid-surface-layer extraction device including a floatable assembly having first, second and third spaced floats, the first float being connected to each of the second and third floats by interconnecting inlet and outlet tubes respectively, the inlet tube having fluid flow communication with an upwardly extending supply tube mounted on one of the second and third floats and the discharge tube having fluid flow communication with an upwardly extending discharge tube mounted on the other of the second and third floats, the interconnecting tubes supporting between them a nozzle which is adapted to direct a stream of fluid downwardly into the surface of a body of liquid, an orifice being disposed directly below said nozzle and being adapted to receive a layer of the liquid entrained by said fluid stream, the orifice being

connected to the outlet tube, the nozzle having a supply duct which extends upwardly through said orifice and the lower



end of the supply duct being connected to the interconnecting inlet tube.

3,962,094

HOLLOW FIBER SEPARATORY DEVICE

James C. Davis, Midland, Mich., and Robert C. Stevens, Miami, Fla., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 398,501, Sept. 18, 1973, abandoned, which is a continuation-in-part of Ser. No. 285,547, Aug. 31, 1972, abandoned. This application Sept. 4, 1975, Ser. No. 610,361

Int. Cl.² B01D *13/00*

U.S. Cl. 210—321 R **19 Claims**

1. A hollow fiber separatory device comprising a hollow fiber bundle consisting of a plurality of fine hollow fibers whose end portions are potted in a tube-sheet and whose open fiber ends terminate in a tube-sheet face, the resulting bundle being sealed within a casing to form a separatory cell having one or more fluid ports which allow for the passage of one fluid through the fibers and another around the fibers without mixing of the two fluids, said tube-sheet comprising a cured polyurethane composition consisting essentially of:

A. A prepolymer which comprises the reaction product of castor oil with at least one mole per castor oil hydroxy group of an organic diisocyanate, and

B. A crosslinking agent comprising

a. castor oil or

b. the ester of

i. a polyhydric alcohol containing at least four hydroxy groups, and

ii. an aliphatic acid of at least 12 carbon atoms and one or more hydroxy and/or epoxy groups per molecule,

or mixtures of (*a*) and (*b*).

3,962,095

DIALYSER CARTRIDGE

Liberto Luppi, Mirandola, Italy, assignor to Sandoz Ltd., Basel, Switzerland

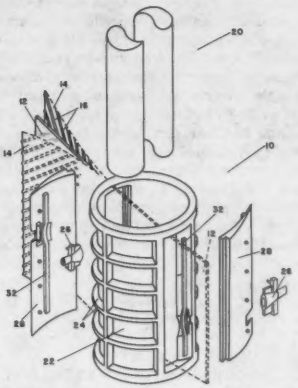
Continuation-in-part of Ser. No. 417,342, Nov. 19, 1973, abandoned. This application Nov. 4, 1974, Ser. No. 520,553

Claims priority, application Italy, June 22, 1973, 25766/73

Int. Cl.² B01D *31/00*

U.S. Cl. 210—321 A **7 Claims**

1. A dialyser cartridge comprising a flat membrane tube through which blood to be dialysed may be passed, membrane support material over the outer surfaces of the membrane tube, a split core between which a central portion of the membrane tube and membrane support material is located and about which core said membrane tube and membrane support material are outwardly spirally wound so that the free ends of the membrane tube and membrane support material are situated at the outer periphery of the winding, the membrane support material comprising bands of sheet material having on one side a series of spaced apart parallel ribs lying against the outer surface of the membrane tube, the membrane tube being sandwiched between a pair of such bands with their ribs facing inwardly towards one another, the series of parallel ribs against one side of the membrane tube being at an angle relative to the series of parallel ribs against the other side of the membrane tube, a hollow cylindrically walled casing encasing the split core and spirally wound membrane tube and membrane support material, blood inlet means for



connection to an arterial line and blood outlet means for connection to a blood venous line leading through the circumferential wall of the casing into the ends of the membrane tube, and a pair of end covers fixed to the ends of the hollow cylindrical casing, one end cover having a dialysate inlet for connection to a dialysate supply line and the other end cover having a dialysate outlet for connection to a dialysate take-off line.

3,962,096

SEPARATOR

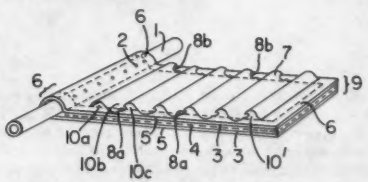
Kiyoshi Ishii, Saitama, and Takehisa Kubo, Ohmiya, both of Japan, assignors to Daicel, Ltd., Tokyo, Japan

Filed June 19, 1975, Ser. No. 588,308

Claims priority, application Japan, June 20, 1974, 49-70381

Int. Cl.² B01D *31/00*

U.S. Cl. 210—433 M **2 Claims**



1. A reverse osmosis separating apparatus, comprising: a pressure vessel having a chamber therein; a reverse osmosis separator cartridge disposed in said chamber, said cartridge comprising a centrally located collecting pipe for discharging permeated liquid, a flexible envelope comprising a semipermeable reverse osmosis membrane defining an internal sealed compartment having a liner therein, said compartment being in fluid-flow communication with said collecting pipe so that flow of feed liquid in contact with the external surface of said membrane will cause liquid to permeate into said compartment and thence flow into said water-collecting pipe for discharge from the vessel, a flexible corrugated spacer extending along the envelope from a position adjacent the collecting

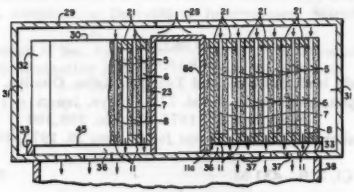
pipe to substantially the outer end of said envelope, said spacer having alternating ridges and grooves defining channels that extend substantially parallel to the collecting pipe, said spacer having inclined wall portions extending between the crests of said ridges and grooves, the correspondingly inclined wall portions adjacent to one edge of said spacer having a first set of notches therein, and the corresponding oppositely inclined wall portions adjacent to the other edge of said spacer having a second set of notches therein with the first and second sets of notches opening in opposite directions to provide communication between adjacent channels, said envelope and said spacer being spirally wound around said collecting pipe so that the spacer is positioned between adjacent turns of said envelope and the crests of the ridges and grooves of the spacer substantially sealingly contacting the membrane whereby the channels define flow passages for the feed liquid; resiliently compressible gaskets sealingly contacting and closing the opposite ends of the channels so that the feed liquid flows through said flow passages in series and flows through said notches when moving from one flow passage to the next; means for feeding the feed liquid into a flow passage adjacent one end of said spacer and means for removing concentrated liquid from a flow passage adjacent the opposite end of said spacer.

3,962,097

SPIRAL-WOUND FILTER

Peter A. Reiman, Weston, and Paul J. Cook, Manchester, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Apr. 22, 1971, Ser. No. 136,332
Int. Cl.[2] B01D *27/00*
U.S. Cl. 210—435 **12 Claims**



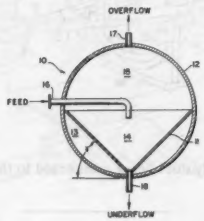
1. A filter unit construction formed from a spirally-wound multi-layer material having two opposed spiral end surfaces, said multi-layer material including at least two flat filter layers and at least two spacer layers; each surface of each filter layer contacting a spacer layer in the spirally wound unit, except for the filter layer forming the outside surface of said unit, said spacer layers being sealed so that a first set of spacer layers contacting each filter layer on a first surface is open to the atmosphere on a first spiral end surface and closed to the atmosphere on the second spiral end surface and a second set of spacer layers contacting the second surface of each filter layer is open to the atmosphere on the second spiral end surface and closed to the atmosphere on the first spiral end surface, said spacer layers being arranged so that spacer layers open on opposing spiral end surfaces are not in contact, the first set of spacer layers being sealed from the atmosphere along the widthwise edge adjacent the center of the spirally-wound unit and along a widthwise portion remote from the center of the spirally-wound unit and the center of said spirally-wound unit being sealed from the atmosphere adjacent at least one spiral end surface.

3,962,098

GRAVITY SETTLING

Morgan C. Sze, Upper Montclair, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Sept. 13, 1974, Ser. No. 505,933
Int. Cl.[2] B01D *21/02*
U.S. Cl. 210—532 R **4 Claims**



1. A gravity settler for separating solids from a coal liquefaction product at an elevated pressure, comprising:

an ellipsoidally shaped housing;

a conically shaped vessel positioned in the lower portion of the ellipsoidally shaped housing and surrounded thereby to define a gravity settling vessel having a conically shaped lower interior portion and a frusto-ellipsoidally shaped upper portion, said conically shaped vessel being sloped with respect to horizontal at an angle of at least 45° and less than 70°;

inlet means for downwardly introducing solids and liquid into an intermediate axial portion of the conically shaped vessel in the area of maximum cross-section;

first outlet means for withdrawing essentially solids free overflow from substantially the uppermost portion of the upper frust o-ellipsoidally shaped interior portion of the gravity settler; and

second outlet means for withdrawing solids containing underflow from the lower conically shaped interior portion of the gravity settler.

3,962,099

WATER BASE DRILLING MUD COMPOSITION

Donald L. Whitfill, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Apr. 29, 1974, Ser. No. 465,027
Int. Cl.[2] C09K *7/02, 7/04*
U.S. Cl. 252—8.5 A **8 Claims**

1. An improved water base drilling mud composition consisting essentially of an aqueous suspension of:

a. from about 5 to 35 pounds per barrel of a clay material;

b. from about 1 to 5 pounds per barrel of an alkaline earth metal hydroxide selected from the group consisting of calcium hydroxide and mixtures of calcium hydroxide and barium hydroxide; and

c. at least a stoichiometric amount, based on the weight of said alkaline earth metal hydroxide, of monocalcium phosphate.

3,962,100

FABRIC SOFTENING AGENTS

Alan P. Murphy, and Rickey Kretschmar, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 18, 1975, Ser. No. 605,479
Int. Cl.[2] D06M *13/36*
U.S. Cl. 252—8.8 **22 Claims**

1. A fabric softening and anti-static composition comprising a softening amount of an alkyl ammonium carbamate compound of the formula

$R_1R_2N\overset{+}{H}_2\tilde{O}(O)CNR_3R_4$

wherein R_1 is hydrogen or an alkyl group, R_2 is a long chain alkyl group having 10 or more carbon atoms, R_3 is hydrogen or an alkyl group, and R_4 is hydrogen or an alkyl group; and sufficient suspending agent to suspend said alkyl ammonium carbamate in water.

3,962,101

COMPOSITION AND METHOD FOR ACIDIZING EARTHEN FORMATIONS

Curtis W. Crowe, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 316,421, Dec. 18, 1972. This application Dec. 17, 1973, Ser. No. 425,575

The portion of the term of this patent subsequent to June 8, 1993, has been disclaimed.

Int. Cl.² E21B *43/26*

U.S. Cl. 252—8.55 C **20 Claims**

1. A composition for acidizing a subterranean formation which comprises:

an aqueous acidizing acid solution for said formation and an effective amount of a cationic surfactant in said solution to reduce the normal reaction rate of said acidizing solution with said formation, said cationic surfactant consisting of an alkyl C_8 to C_{18} primary amine characterized as rendering the formation surface oil-wet.

8. A method of acidizing an oil containing subterranean formation with an acidizing acid solution which comprises:

contacting the subterranean formation with an acidizing acid solution containing dispersed therein an effective amount of a cationic surfactant consisting of an alkyl C_8 to C_{18} primary amine to increase the normal reaction time of said acidizing acid solution with said formation, said cationic surfactant characterized as in the presence of said acid, rendering oil containing formations oil-wet.

3,962,102

COMPOSITION AND METHOD FOR ACIDIZING EARTHEN FORMATIONS

Curtis W. Crowe, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 402,559, Oct. 1, 1973, abandoned, which is a continuation-in-part of Ser. No. 316,421, Dec. 18, 1972, Pat. No. 3,917,536. This application Dec. 17, 1973, Ser. No. 425,574

The portion of the term of this patent subsequent to June 8, 1993, has been disclaimed.

Int. Cl.² E21B *43/22*, *43/28*

U.S. Cl. 252—8.55 C **11 Claims**

1. A method of acidizing an acid-soluble formation with an acidic solution in which said formation is soluble wherein the normal reaction time of said acid is extended, comprising:

contacting said formation with a mixture of an aqueous acidizing solution-in-oil emulsion and an effective amount of a cationic surfactant to increase the normal reaction time of said aqueous acidizing solution-in-oil emulsion with said formation, said cationic surfactant consisting of an alkyl C_8 to C_{18} primary amine.

3,962,103

DRY POWDER LUBRICANT

William G. Johnston, Pittsburgh, and Wendell C. Milz, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed May 16, 1975, Ser. No. 578,340

Int. Cl.² C10M *3/18*, *5/14*, *7/20*, *7/24*

U.S. Cl. 252—22 **6 Claims**

1. A dry powder composition suitable for use as a high temperature forging lubricant comprising a 1–10 carbon fatty acid salt of a group IV-A metal and an alkali metal soap wherein exposure to temperatures in excess of about 100°C will cause the soap and the salt to react to form a group IV-A metal soap lubricant in situ.

3,962,104

LUBRICATING OIL COMPOSITIONS

Joseph Marian Swietlik, Reading, and Michael David Sexton, Oxford, both of England, assignors to Exxon Research and Engineering Company, Linden, N.J.

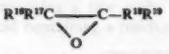
Filed June 24, 1974, Ser. No. 482,642

Claims priority, application United Kingdom, June 27, 1973, 30509/73

Int. Cl.² C10M *1/48*, *1/40*, *1/32*, *1/54*

U.S. Cl. 252—32.7 E **16 Claims**

1. A lubricating oil composition comprising a major amount of a mineral or synthetic lubricating oil and a minor amount of a quaternary ammonium salt useful as an oil improving additive, wherein: the cation is derived from the reaction product of a one molar proportion of tertiary amine with one or more molar proportions of an olefin oxide and an amount of water in excess of stoichiometric, the anion is derived from an organic acid, and wherein: said tertiary amine has the formula $R^1R^2R^3N$ where R^1, R^2 and R^3 are the same or different alkyl, cycloalkyl, alkenyl, cycloalkenyl, substituted alkyl, substituted alkenyl, aromatic or substituted aromatic groups, each having 1 to 20 carbon atoms; said olefin oxide has the formula:



where R^{16}, R^{17}, R^{18} and R^{19} which may be the same or different are hydrogen atoms, alkyl, cycloalkyl, alkenyl, cycloalkenyl, aromatic or substituted aromatic groups; and wherein said organic acid is selected from the group consisting of carboxylic acid, carboxylic acid anhydride, dialkyldithiophosphoric acid, diaryldithiophosphoric acid, phenols, sulphonic acid, and phosphosulfurized hydrocarbon.

3,962,105

LUBRICATING COMPOSITIONS

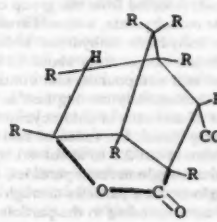
Richard Michael Lange, Euclid, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

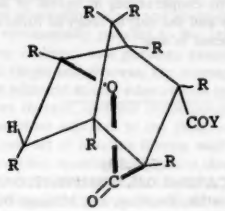
Filed Mar. 25, 1975, Ser. No. 561,963

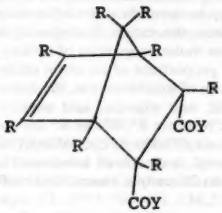
Int. Cl.² C10M *1/24*, *3/18*, *5/12*, *7/20*

U.S. Cl. 252—56 R **15 Claims**

1. A lubricating composition comprising a major amount of lubricating oil and a minor, effective, amount of an additive selected from the group consisting of those represented by the formulae:







and mixtures thereof, wherein each R is independently selected from the group consisting of hydrogen and lower alkyl, and each Y contains up to twenty-two carbon atoms and is independently selected from the group consisting of hydrocarbon-based oxy radicals and the oxy residue of polyhydric alcohol.

3,962,106

METHOD FOR AGGLOMERATING CHLOROCYANURATES

Fred K. Rubin, Leonia, and Donald V. Kinsman, Tenafly, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Aug. 1, 1974, Ser. No. 493,599
Int. Cl.² C11D 7/54
U.S. Cl. 252—99 **12 Claims**

1. A method of agglomerating salts of chlorocyanuric acid selected from the group consisting of sodium and potassium dichlorocyanurate, sodium dichlorocyanurate dihydrate and [(monotrichloro)-tetra-(monopotassium dichloro)]pentaisocyanurate, said method resulting in an agglomerated particle having increased storage stability and compositional uniformity when admixed with a detergent base, which method comprises the steps of:

i. contacting said salts of chlorocyanuric acid with an agglomerating liquid, said liquid being a concentrated solution of compounds selected from the group consisting of potassium citrate monohydrate, sodium citrate dihydrate, sodium acetate trihydrate, anhydrous sodium sulfate, wherein the solution ranges from about 10% to a saturated solution of said compounds, said contacting being conducted in a continuously moving bed so as to allow intimate contact of said salts of chlorocyanuric acid with said agglomerating liquid, the ratios of said salt to said liquid ranging from about 2:1 to about 4:1 by weight,

ii. drying the resultant agglomerated particles, and

iii. passing said agglomerated particles through a sieve, said sieve mesh size corresponding to the particle size of said granular detergent base to which the agglomerated particles are added.

3,962,107

ENZYME-CONTAINING DENTURE CLEANSER TABLET

Norman Arthur Levin, Somerville, and Leonard Louis Kaplan, East Brunswick, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed June 24, 1974, Ser. No. 482,404
Int. Cl.² C11D 7/54
U.S. Cl. 252—100 **5 Claims**

1. A water-soluble effervescent layered denture cleanser tablet consisting essentially of

a. an enzyme layer in an effervescence producing composition and,

b. an active oxygen layer in an effervescence producing composition

wherein the enzyme layer is faster dissolving than the active oxygen layer; and wherein

i. said tablet contains at least one enzyme in an amount of from about 0.5 to 10 percent by weight and at least one active oxygen compound in an amount of from about 38 to 42 percent by weight, said amounts being based on the total weight of tablet,

ii. in said tablet the enzyme layer is less than one-half and the active oxygen layer more than one-half of the total thickness of the tablet,

iii. the effervescence producing composition in each layer of said tablet comprises an acid and an alkali metal carbonate compound,

iv. the amount of said effervescence producing composition to be incorporated in said tablet is for the enzyme layer from about 75 to 90 percent of the weight of the enzyme layer and for the active oxygen layer from about 30 to 40 percent of the weight of the active oxygen layer, and

v. each layer of said tablet has incorporated therein components in the form of finely divided powder of particle size of about 177 microns or less, the amounts of said powder being, for the enzyme layer from about 30 to 50 percent of the weight of the components of the enzyme layer and for the active oxygen layer from about 20 to 30 percent of the weight of the components of the active oxygen layer.

3,962,108

CHEMICAL STRIPPING SOLUTION

Salvatore M. Perruccio, San Jose, Calif., assignor to KTI Chemical, Inc., Sunnyvale, Calif.

Filed Nov. 3, 1975, Ser. No. 628,204
Int. Cl.² C11D 7/08; C23G 1/02
U.S. Cl. 252—142 **4 Claims**

2. A stripping solution for removing organic deposits from wafers of silicon, silicon dioxide coated silica, aluminum coated silicon and the like, comprising:

H_2SO_4 in an amount between 80 and 98 percent by weight of the total solution;

H_2O in an amount between 0 and 8 percent by weight of the total solution;

$HClO_4$ in an amount between 0.5 percent and 4 percent by weight of the total solution; and

CrO_3 in an amount between 0.5 and 4 percent by weight of the total solution.

3,962,109

AUTOMOTIVE CLEANER PLUS INHIBITOR

Alfred W. Oberhofer, Downers Grove, Ill.; James J. Benko, Griffith, Ind., and Joseph C. Drozd, Park Ridge, Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Dec. 16, 1974, Ser. No. 533,356

The portion of the term of this patent subsequent to May 25, 1993, has been disclaimed.

Int. Cl.² C02B 5/00

U.S. Cl. 252—146 18 Claims

1. A liquid cleaner-inhibitor composition for automotive cooling systems consisting essentially of:

I. A cleaner portion consisting essentially of from 15–85% by weight of water and from 85–15% by weight of a Deposit Release Agent consisting essentially of:

A. An aminopolycarboxylic acid

B. An α hydroxy carboxylic acid

C. An azole copper protector selected from the group consisting of mercaptobenzothiazole and a monobenzotriazole with the ratio of A:B:C being within the range of from 3:1:1 to 2:1:1

and

II. An inhibitor portion consisting essentially of from 75–85% by weight of water and from 25–15% by weight of:

E. Borax or alkali metal borate

F. Alkali metal nitrite

G. Alkali metal silicate with a ratio of E:F:G being in the range of from 10:3:5 to 1:1:1

said composition having a pH of 7.5–12.6.

3,962,110

PROCESS AND COMPOSITION FOR PREVENTING SCALE BUILD-UP

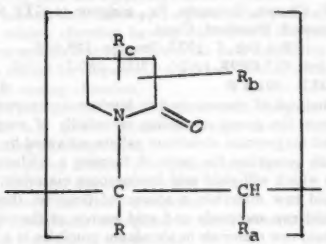
Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 82,186, Oct. 19, 1970, abandoned, and a continuation-in-part of Ser. No. 157,060, June 25, 1971, abandoned. This application Oct. 4, 1974, Ser. No. 511,973

Int. Cl.² C02B 5/02, 5/06

U.S. Cl. 252—181 10 Claims

1. A process for controlling the build-up of inorganic mineral scale deposits in an aqueous system which comprises incorporating in said system a composition consisting essentially of a water-soluble polyvinylpyrrolidone, the said polyvinylpyrrolidone being present in an amount sufficient to inhibit the development of scale, wherein the said polyvinylpyrrolidone comprises recurring units of the formula:



wherein R, R_a, R_b and R_c are independently selected from the group consisting of hydrogen and alkyl of from 1 to 5 inclusive carbon atoms, and the molecular weight of the said polyvinylpyrrolidone being from about 10,000 to about 1,000,000; and wherein the said system is made acidic through the addition of up to about 30 percent by weight of a non-oxidizing mineral acid.

3,962,111

PROCESS FOR THE PRODUCTION OF SILICO-FORMIC ACID GRANULES CONTAINING AN ALKALI CATALYST

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Filed Apr. 21, 1975, Ser. No. 569,952

Int. Cl.² C01B 33/12, 33/18, 33/00

U.S. Cl. 252—182 6 Claims

1. A process for the production of silico-formic acid granules containing an alkali metal carbonate by the following steps:

a. dry granular alkali metal metasilicate is slowly added to concentrated mineral acid in the ratio of 1:1 mols over a period of 15–45 minutes, while aggitating and keeping the temperature between 25°–85° C; the chemical reaction is completed in 4–12 hours, thereby

b. producing a white granular mixture of silico-formic acid and salt; then by

c. washing with water and filtering, the salt is removed, thereby

d. recovering the silico-formic acid; then

e. a residue of alkali metal carbonate is added to the silico-formic acid by adding an aqueous solution containing 10–25% alkali metal carbonate until the pH is 10–11, then filtering and air drying at 25°–85°, thereby

f. producing a fine white granular mixture, silico-formic acid containing a residue of alkali metal carbonate.

3,962,112

COMPOSITION AND PROCESS FOR REMOVING SULFUR DIOXIDE FROM COMBUSTION GASES

Charles William Shaheen, 1074 Highland Ave., St. Albans, W. Va. 25177

Filed Aug. 26, 1974, Ser. No. 500,653

Int. Cl.² C01B 17/56; B01D 53/34

U.S. Cl. 252—187 R 23 Claims

1. The process of removing SO_2 from gases emitted by the combustion of materials comprising:

treating said gases with a liquid aqueous composition comprising,

0.1 to 10 pounds of ClO_2 per 100 pounds of SO_2 to be treated and from 5 to 40 pounds of detergent per pound of ClO_2.

3,962,113

METHOD FOR ACCELERATING OXYGEN REMOVAL EMPLOYING AN AQUEOUS SOLUTION OF AN ALKYL HYDRAZINE

Henry W. Schiessl, Northford, and John D. Kaufman, Prospect, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 318,286, Dec. 26, 1972, abandoned. This application Apr. 15, 1974, Ser. No. 460,844

Int. Cl.² C09K 3/00

U.S. Cl. 252—188 10 Claims

1. A method for removing oxygen from an oxygen-containing material which comprises admixing said oxygen-containing material with a liquid organic hydrazine compound selected from the group consisting of monoalkyl hydrazines wherein the alkyl contains from 1 to about 10 carbon atoms, dialkyl hydrazine wherein alkyl contains from 1 to about 8 carbon atoms, and trialkyl hydrazines wherein the alkyl contains from 1 to about 4 carbon atoms, and having substituents in said alkyl selected from the group consisting of hydroxyl and amino radicals, in which said organic hydrazine com-

pound is present in an amount sufficient to remove said oxygen and maintain a residual organic hydrazine concentration corresponding to a hydrazine equivalent weight of from about 0.01 to about 1000 parts per million.

3,962,114

METHOD FOR SOLIDIFYING LIQUID RADIOACTIVE WASTES

Julius R. Berreth, Idaho Falls, Idaho, assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 11, 1975, Ser. No. 567,340
Int. Cl.[2] G21F 9/08
U.S. Cl. 252—301.1 W 5 Claims

1. In the method of solidifying liquid radioactive wastes by heating the wastes to dryness, wherein the wastes contain nitrates and nitrites which upon heating evolve noxious nitrogen oxides, the improvement comprising: adding urea to the waste solution before heating the waste solution, whereby upon heating the solution to between 130° and 180°C the urea reacts with the nitrates and nitrites present in the solution to evolve N_2, CO_2 and NH_3 gases.

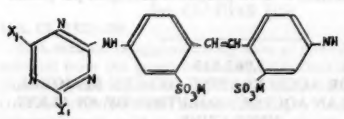
3,962,115

TREATMENT OF OPTICAL BRIGHTENING AGENTS

David Ronald Clark; Thomas Gerald Hyde, both of Sale, England, and Robert Erik Brauchbar, Aesch, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 128,198, March 25, 1971, abandoned. This application Oct. 30, 1973, Ser. No. 411,169
Claims priority, application United Kingdom, July 9, 1970, 33419/70
Int. Cl.[2] C09K 11/06
U.S. Cl. 252—301.23 23 Claims

1. In a process for preparing an aqueous slurry containing from 15% to 60% by weight, based on the total weight of the slurry, of a compound of the formula



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wherein X_1 and Y_1 are the same or different and each is phenylamino, phenylamino mono- or di-substituted by alkyl radicals having 1 or 2 carbon atoms, morpholino, alkylamino having 1 to 4 carbon atoms, alkylamino having 1 to 4 carbon atoms substituted by hydroxyl radicals or alkoxy having 1 to 4 carbon atoms, and M is hydrogen or an alkali metal, a major portion of the particles of this compound having size of 5 – 20 microns, which comprises mixing the wet filter cake obtained during the preparation of this compound with an agent to form the slurry, the improvement wherein the agent is from 0.1% to 5% by weight, based on the weight of the wet filter cake, of an anionic, cationic or nonionic surface active agent as dispersing agent, such that the resultant slurry is thixotropic and will not settle out appreciably on static storage and will have a Brookfield viscosity of from 200 to 10,000 centipoises at 6 r.p.m. and up to 2,000 centipoises at 60 r.p.m.

3,962,116

COMPOSITIONS OF OPTICAL BRIGHTNESS AND ALUMINOSILICATES AND METHODS OF THEIR PRODUCTION

Helmut Bloching, Hilden; Heinz Smolka, Langenfeld, and Milan Johann Schwuger, Monheim, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen and Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, both of, Germany

Filed Jan. 15, 1975, Ser. No. 541,208
Claims priority, application Austria, Jan. 17, 1974, 369/74
Int. Cl.[2] C09K 11/30
U.S. Cl. 252—301.21 11 Claims

1. A heat-dried, finely-divided composition of optical brighteners and fillers consisting essentially of from 10 to 90% by weight of optical brighteners for textile fibers and from 10 to 90% by weight of fillers wherein from 50 to 100% by weight of said fillers is at least one compound inhibiting alkaline earth metal ion precipitation from aqueous solutions consisting of a finely-dispersed, water-insoluble silicate compound containing at least some combined water and having a calcium binding power of at least 50 mg CaO/gm of anhydrous active substance and the formula on the anhydrous basis

$$(M_{2/n}O)_x \cdot Me_2O_3 \cdot (SiO_2)_y$$

where M is a cation of the valence n, exchangeable with calcium selected from the group consisting of alkali metal, ammonium and magnesium, x is a number of from 0.7 to 1.5, Me is a member selected from the group consisting of aluminum and boron, and y is a number from 0.8 to 6; and from 0 to 50% by weight of said fillers is an organic hydrotropic compound selected from the group consisting of anionic hydrotropic compounds and non-ionic hydrotropic compounds.

3,962,117

CATHODOLUMINESCENT GLASSES ACTIVATED BY MANGANESE

Richard F. Reade, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 17, 1974, Ser. No. 470,836
Int. Cl.[2] C09K 11/34; C03C 3/10
U.S. Cl. 252—301.4 F 1 Claim

1. A yellow-to-orange emitting cathodoluminescent glass consisting essentially, by weight on the oxide basis, of about 45–65% SiO_2, 15–35% Al_2O_3, 5–30% RO, wherein RO consists of at least one alkaline earth metal oxide in the indicated proportion of 0–30% MgO, 0–20% CaO, and 0–20% SrO, 2–5% ZrO_2, 0.05–0.5% SnO, and 0.25–3% manganese, expressed as MnO.

3,962,118

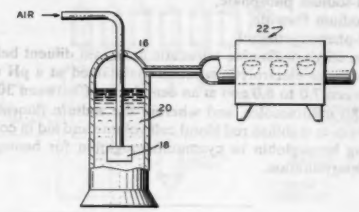
METHOD OF MAKING IMPROVED MAGNESIUM GALLATE PHOSPHORS

Charles F. Chenot, Towanda, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Feb. 5, 1973, Ser. No. 329,651
Int. Cl.[2] C09K 11/26, 11/30, 11/12, 11/16
U.S. Cl. 252—301.4 R 4 Claims

1. A method of manufacturing luminescent materials selected from the group consisting essentially of magnesium gallate and magnesium aluminum gallate activated by manganese which comprises the steps of: forming a mixture of raw materials which will yield said luminescent materials; including in said raw materials a source of fluorine; thoroughly mixing said raw materials and said source of fluorine; heat treating said raw materials in aluminum crucibles in a humidi-

fied, oxidizing atmosphere for about 2 hours at a temperature of about 1200°C–1300°C; cooling and comminuting said material; reheating said material in silica crucibles in a reducing



atmosphere for less than 40 minutes at a temperature of about 1200°C–1300°C; and cooling, comminuting and sieving said material.

3,962,119
NON-FOAMING DISPERSING COMPOSITION

Joseph P. Cosentino, Nutley, and Frederick R. Mahn, Verona, both of N.J., assignors to Drew Chemical Corporation, Parsippany, N.J.

Filed Aug. 6, 1971, Ser. No. 169,820
Int. Cl.² B01F *17/54*
U.S. Cl. 252—351 **12 Claims**

1. A dispersant composition consisting essentially of:
   a. an oxyalkylene polymer having a molecular weight from about 500 to about 5000 wherein the recurring units consist of a member selected from the group consisting of oxypropylene, and mixture of oxypropylene and oxyethylene; and
   b. a polysiloxane-polyoxyalkylene block copolymer having a molecular weight from about 500 to about 10,000 wherein the polysiloxane block consists essentially of recurring units of a dialkyl siloxane wherein the alkyl group has from 1–3 carbon atoms and the oxyalkylene block consists essentially of recurring units of a member selected from the group consisting of oxypropylene, oxyethylene and mixtures thereof, said components (*a*) and (*b*) being present in an amount effective to disperse contaminents in aqueous and polar organic liquid systems.

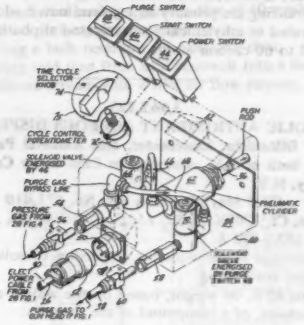
3,962,120
POLYURETHANE FOAM GENERATING APPARATUS

Louis R. Chiocchio, and Robert S. Zirlis, both of East Haven, Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 451,255, March 14, 1974, abandoned. This application Apr. 28, 1975, Ser. No. 572,002
Int. Cl.² B01J *13/00*
U.S. Cl. 252—359 E **14 Claims**

1. In an apparatus for mixing first and second interreactive polyurethane foam-forming materials and generating foam therefrom, which apparatus comprises
   a. a first tank for supplying the first material,
   b. a second tank for supplying the second material,
   c. a mixing chamber having inlet means for receiving the first and second materials from their respective tanks and an outlet for dispensing a mixture of said materials from said mixing chamber,
   d. first and second valve means for admitting the flow of the first and second materials, respectively, through said mixing chamber, and,
   e. connecting means for coordinating closing and opening of said first and second valve means,

the improvement which comprises
   f. an electrically energized actuator means for operating said connecting means and
   g. electrical timing means adapted to be connected to an electrical power source, for operating said actuator means for a predetermined time period, said timing means comprising
      1. an electrical timer, which is electrically connected to said actuator means for timed energization thereof,



      2. a potentiometer adjacent to said mixing chamber, said potentiometer being electrically connected to said timer and manually operable to vary the duration of the time period of operation of said timer, and
      3. first switch means mounted adjacent to said mixing chamber for connecting the electrical power source to said timer thereby energizing said timer.

3,962,121
PROCESS FOR PREPARING QUATERNARY AMMONIUM SALT POWDERS

Masaaki Takaku, and Shiro Imai, both of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1974, Ser. No. 442,592
Claims priority, application Japan, Feb. 20, 1973, 48-20408
Int. Cl.² B01F *3/00*
U.S. Cl. 252—363.5 **4 Claims**

1. A process for preparing powders of long chain alkyl quaternary ammonium salts which comprises mixing a member or a mixture of two or more members selected from the group consisting of water and alcohols which are liquid at ambient temperature with a long chain alkyl quaternary ammonium salt in an amount of 1 to 33% by weight based on the total weight of the mixture and subjecting the obtained quaternary ammonium salt mixture to a spray-cooling operation to obtain a powdery product of the quaternary ammonium salt.

3,962,122
POLYAMIDE CORROSION INHIBITOR

Charles Ballard Trial, Odessa, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed June 24, 1975, Ser. No. 589,829
Int. Cl.² C23F *11/14*
U.S. Cl. 252—392 **16 Claims**

1. A ferrous metal corrosion inhibitor prepared by
   a. forming a primary amine-terminated amide adduct having a molecular weight of about 800 to 1500 by reacting a polyamine component containing at least 85% by weight of a mixture containing about 1 to 50% 1,6-hexanediamine, about 10 to 60% 1,6-hexanediamine dimer and about 10 to 70% 1,6-hexanediamine trimer with an organic acid component containing at least 85% by weight of a mixture containing about 10 to 40% monofunctional carboxylic acid having 15–23 carbon atoms, about 20–70% difunctional aliphatic carboxylic acids containing 36–40 carbon atoms, and about 10–40% trifunctional aliphatic carboxylic acids containing 54–60

carbon atoms, said acid component being free of compounds having atoms which interfere with the formation of the desired product or its effectiveness as a corrosion inhibitor, the relative amounts of polyamine component and organic acid component being such that the ratio of primary amine groups to carboxyl groups in the reaction mixture is about 1.8 to 3.0; and

b. neutralizing the primary amine-terminated adduct with a saturated or ethylenically unsaturated aliphatic acid having 2 to 60 carbon atoms.

3,962,123

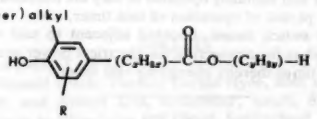
PHENOLIC ANTIOXIDANT AQUEOUS DISPERSIONS

Anthony DiBattista, Eastchester, and Ambelal Patel, Dobbs Ferry, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 20, 1974, Ser. No. 471,410
Int. Cl.² C09K 15/32, 15/08, 15/10; C08K 5/05
U.S. Cl. 252—400 A 12 Claims

1. A storage stable aqueous dispersion of solid phenolic antioxidant comprising

a. 10 to 80%, by weight, based on the weight of the total dispersion, of a compound of the formula



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in which R is H or lower alkyl, x has a value of from 0 to 6 inclusively and y has a value of from 6 to 30 inclusively; and

b. 2 to 30% by weight, based on the weight of compound I, of a fatty acid soap formed from a fatty acid and a base, or

c. 1 to 30% by weight, based on the weight of compound I, of a nonionic or anionic surfactant; and

d. water.

3,962,124

OXIDATION STABILIZED ORGANIC COMPOSITIONS

Kaye L. Motz, and Allan J. Lundeen, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Mar. 25, 1974, Ser. No. 454,492
Int. Cl.² C09K 15/08; C10M 1/20; C09K 15/06; C08K 5/05
U.S. Cl. 252—404 6 Claims

1. The use of a condensation reaction product of (1) a nonhindered phenol selected from the group consisting of: meta- cresol, para- cresol or a mixture of meta and para cresols, and (2) an aldehyde defined by R-CHO wherein R is hydrogen or an alkyl group having at least 1 carbon atom, as an antioxidant in organic compositions.

3,962,125

MULTI-PURPOSE DILUENT FOR USE IN BLOOD ANALYSIS BY ELECTRONIC INSTRUMENTATION OF THE COULTER TYPE

Douglas Armstrong, Coral Springs, Fla., assignor to Coulter Diagnostics, Inc., Hialeah, Fla.

Filed Jan. 13, 1975, Ser. No. 540,584
Int. Cl.² G01N 33/16
U.S. Cl. 252—408 9 Claims

1. A multi-purpose blood diluent, which is both isotonic and osmotically balanced relative to the solutions in blood cells, to be analyzed for a plurality of classic parameters in an electronic particle analysis apparatus of the Coulter type consisting essentially of:

a. an osmotically balanced solution of sodium chloride, potassium chloride, sodium di-hydrogen phosphate and di-sodium phosphate,

b. sodium fluoride,

c. 2-phenoxyethanol,

d. an ethylenediamine tetracetic acid, said diluent being an aqueous electrolytic solution maintained at a pH of between 7.0 to 8.0 and at an osmolality of between 300 and 380 milliosmoles, and wherein the sodium fluoride services to stabilize red blood cell volume and aid in converting hemoglobin to cyanmethemoglobin for hemoglobin determination.

3,962,126

REACTIVATION OF A MAGNESIUM OXIDE CATALYST

William Eugene Pecak, Cohoes, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 25, 1974, Ser. No. 527,139
Int. Cl.² B01J 21/20, 31/06
U.S. Cl. 252—416 12 Claims

1. In the method of reactivating a carbonized magnesium oxide catalyst that has become carbonized by use in a phenol alkylation reaction which comprises burning carbon from said catalyst by exposing said catalyst to heat in an oxygen containing atmosphere, to form a partially reactivated catalyst the improvement which consists essentially of contacting said partially reactivated catalyst with a sufficient amount of water at a temperature below 300 °C to restore the activity of said catalyst.

8. In a method of reactivating a carbonized magnesium oxide catalyst that has become carbonized by use in catalyzing the vapor phase ortho methylolation of phenol with methanol by exposing said carbonized magnesium oxide catalyst to a temperature of from 200° to 800°C in an oxygen containing atmosphere to form partially reactivated catalyst, the improvement which consists essentially of contacting said partially reactivated catalyst with water at a temperature below 300°C at a 1:10 to a 10:1 weight ratio of water to catalyst to restore the catalytic activity to the level of activity possessed by a freshly prepared catalyst.

11. The method of claim 10 wherein the catalyst also includes a manganese oxide selected from the group consisting of manganese oxide, dimanganese trioxide, trimanganese tetroxide, manganese heptoxide and mixtures thereof.

3,962,127

PROCESS FOR REMOVING INTERMITTANT ORGANIC COMPOUNDS FROM GASEOUS STREAMS

Rudolph C. Woerner, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Aug. 19, 1974, Ser. No. 498,388
Int. Cl.² B01D 15/06
U.S. Cl. 252—419 4 Claims

1. A process for regenerating a contact mass catalyst having coked thereon burnable carbonaceous materials comprising:

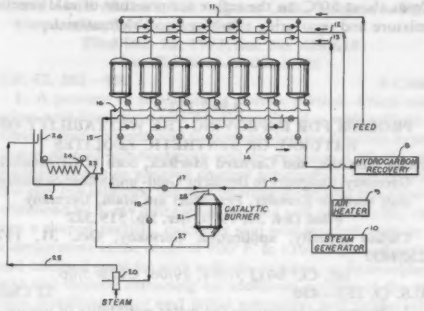
a. contacting said coked catalyst with a first gaseous stream containing from about 15% to 20% by volume of oxygen, said gaseous stream being at a temperature in the range of 800° to 1500°F,

b. said first gaseous stream volatilizing a portion of said carbonaceous materials from said catalyst,

c. admixing a portion of said gaseous stream comprising about 5 to 8 volume % thereof and containing said volatilized carbonaceous materials with a second gaseous stream and containing at least about 10 volume percent oxygen,

d. converting said carbonaceous materials in said gaseous mixture of step (c) into carbon dioxide and water at a

temperature in the range of 800° to 1500°F, and



e. recovering a gaseous stream from step (*d*) having substantially less of said carbonaceous material than said mixture.

3,962,128

COAL DUST FUEL DISTRIBUTION SYSTEM AND METHOD OF MANUFACTURING ACTIVATED CARBON

James D. Nelson, and Gert R. Winge, both of Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Filed July 5, 1974, Ser. No. 486,101

Int. Cl.[2] B01J *21/18*, *31/10*; F23K *3/02*; B65G *53/40*

U.S. Cl. 252—421 4 Claims

1. A method of manufacturing coal based activated carbon comprising the steps of:

A. segregating coal dust particles of 40 mesh and less from a bulk coal supply;

B. transporting coal particles larger than 40 mesh from said bulk supply through a multihearth activation furnace;

C. aspirating said dust particles into a first fluidized mixture stream with a first air flow stream;

D. delivering said first fluidized mixture stream to a mixing chamber;

E. holding said dust particles in turbulent fluidized suspension within said mixing chamber;

F. aspirating a second fluidized mixture stream from said mixing chamber to a combustion hearth of said multihearth activation furnace with a second air flow stream;

G. conducting a third fluidized mixture stream from said mixing chamber to a particle reservoir; and

H. controlling the relative flow rates of said first, second, and third fluidized mixture streams whereby the combined flow rates of said second and third mixture streams equal or exceed said first mixture stream.

3. In combination with a heat generating furnace, a fuel distribution system for delivering particulate coal dust to a combustion hearth of said furnace, said distribution system comprising:

A. a bulk reservoir for said coal dust;

B. a first aspirator having a chamber proximate of a low pressure induction zone of said first aspirator for receiving said coal dust from said reservoir;

C. a first pressurized air supply source connected to said first aspirator for evacuating said coal dust from said chamber into a first fluidized flow stream;

D. a mixing chamber having a first conduit connected therewith for receiving said first fluidized flow stream and holding a fluidized mixture of air and coal dust in turbulent suspension;

E. a second aspirator having a receiving chamber and low pressure induction zone flow connected to said mixing chamber through a second conduit;

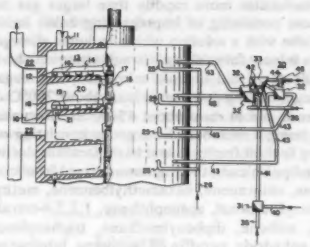
F. a second pressurized air supply source connected to said second aspirator for evacuating said fluidized mixture from said second aspirator receiving chamber into a second fluidized flow stream for delivery to said furnace combustion hearth; and,

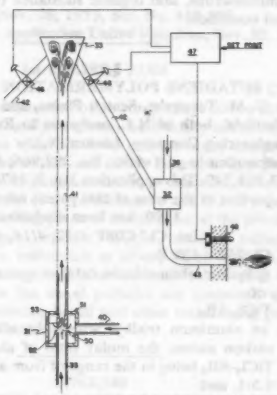
G. a third conduit having flow control means therein connected to said mixing chamber for venting a select portion of fluidized mixture within said mixing chamber therefrom.

4. A method of firing a heat generating furnace combustion hearth with coal dust having a particle size of 40 mesh or less, said method comprising the steps of:

A. providing a bulk reservoir for said coal dust;

B. aspirating said dust from said reservoir into a first fluidized mixture stream with a first air flow stream;





C. delivering said first fluidized mixture stream to a mixing chamber;

D. holding said dust in turbulent fluidized suspension within said mixing chamber;

E. aspirating a second fluidized mixture stream from said mixing chamber to a furnace combustion hearth with a second air flow stream;

F. conducting a third fluidized mixture stream from said mixing chamber to a recirculation system; and

G. controlling the relative flow rates of said first, second and third fluidized mixture streams whereby the combined flow rates of said second and third mixture streams equal or exceed said first mixture stream.

3,962,129

IMPREGNATION OF COKE WITH AN ORGANIC COMPOUND TO PRODUCE A MOLECULAR SIEVE

Heinrich Münzner, Essen; Heinrich Heimbach, Bochum; Werner Korbacher, Essen; Werner Peters, Wattenscheid; Harald Juntgen, Essen; Karl Knoblauch, Essen; Dieter Zundorf, Essen, and Hugo Horbel, Essen, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Filed Feb. 4, 1974, Ser. No. 439,654

Claims priority, application Germany, Feb. 3, 1973, 2305435

Int. Cl.² B01J *31/02, 21/18, 29/02*

U.S. Cl. 252—428 8 Claims

1. A process for the production of a carbon-containing molecular sieve capable of separating different gases, particularly oxygen and nitrogen, and capable of adsorbing smaller gas molecules more rapdily than larger gas molecules, said process consisting of impregnating coke, having pores of a first size with a solution which includes an organic substance and a solvent for said organic substance which volatilizes more readily than said organic substance, said organic substance having a boiling point of at least about 200°C at atmospheric pressure and at most about 450°C at substantially zero pressure being a member of the group consisting of the light and heavy fuel oil fractions and hard paraffins derived from crude oil and petroleum, the fractions derived from coal tar, phenanthrene, anthracene, hexamethylbenzene, methylnaphthalene, diphenyl, dibenzl, acenaphthene, 1,2,3,4-tetrahydronaphthalene, stilbene, diphenylmethane, triphenylmethane, maleic acid anhydride, paraffin oil, kerosene, lubricating oil and pitch distillation residues; and permitting said solvent to undergo evaporation under conditions such that said organic substance remains in said pores thereby causing a reduction of said first size to an effective second size between about 0.2 and about 0.6 millimicrons, said organic substance being left in a non-coked condition.

3,962,130

BUTADIENE POLYMERIZATION CATALYST

Erik G. M. Tornqvist, Scotch Plains, and Charles Cozewith, Westfield, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 392,966, Aug. 30, 1973, Pat. No. 3,865,749. This application Jan. 2, 1975, Ser. No. 538,172

The portion of the term of this patent subsequent to Dec. 18, 1990, has been disclaimed.

Int. Cl.² C08F *4/12, 4/14, 4/64*

U.S. Cl. 252—429 B 1 Claim

1. A hydrocarbon-soluble catalyst system consisting essentially of:

a. $TiCl_4$-AlI_3;

b. an aluminum trialkyl where the alkyl has from 1–12 carbon atoms, the molar ratio of aluminum trialkyl to $TiCl_4$-AlI_3 being in the range of from about 1.5:1 to about 4.5:1; and

c. a Lewis base selected from the group consisting of tetrahydrothiophene, tetrahydropyran, tetrahydrofuran, tetrahydrothiopyran, and 2,5-dimethyl tetrahydrofuran, the mole ratio of Lewis base to $TiCl_4$ being in the range of 10:1 to 200:1.

3,962,131

RHODIUM CONTAINING CATALYST AND USE THEREOF IN PREPARATION OF 6-DEOXY-5-OXYTETRACYCLINE

Hermann Faubl, Mystic, and Annette M. Belton, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Jan. 28, 1975, Ser. No. 544,839

Int. Cl.² B01J *31/04, 31/24, 31/30*

U.S. Cl. 252—429 R 3 Claims

1. A catalyst produced by the process of reacting 1 mol of rhodium trichloride and 2 mols of sodium acetate in methanol at a temperature from about 50°C. to the reflux temperature of said reaction mixture, then reacting resulting reaction mixture with 2 mols of triphenylphosphine at a temperature of from about 50°C. to the reflux temperature of said reaction mixture and recovering resulting insoluble material.

3,962,132

PROCESS FOR IMPROVING THE WETTABILITY OF NATURAL OR SYNTHETIC ZEOLITES

Heinz Haschke, and Gerhard Morlock, both of Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Oct. 30, 1974, Ser. No. 519,322

Claims priority, application Germany, Oct. 31, 1973, 2354432

Int. Cl.² B01J *31/04, 29/06;* C02B *5/06*

U.S. Cl. 252—430 22 Claims

1. Process for improving the water wettability of natural or synthetic zeolites, said process comprising thoroughly mixing at least one natural zeolite, synthetic zeolite or mixture of natural and synthetic zeolites with an aqueous solution of a treating agent selected from the group consisting of at least one polyelectrolytic polycarboxylic acid, at least one completely or partially neutralized polycarboxylate, or at least one mixture of said polycarboxylic acid and polycarboxylate; wherein said treating agent has at least about 40 basic mole percent carboxyl or carboxylate groups and a mean degree of polymerization (numerical mean) between about 3 and about 5000; said mixing conducted at about 0° to about 100°C for at least about 5 minutes; said aqueous solution employed in a concentration between about 2 g and about 800 g polycarboxylic acid or polycarboxylate per liter and in such quantity that it comprises about 0.01 to about 10 parts by weight, related to one part by weight of zeolite, of the polycarboxylic acid or polycarboxylate.

3,962,133

GRAPHITE INTERCALATION

Paul G. Rodewald, Rocky Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 12, 1974, Ser. No. 532,146

Int. Cl.² B01J *27/12*

U.S. Cl. 252—433 12 Claims

1. A method of intercalating a Lewis acid fluoride in graphite which comprises contacting graphite with a Lewis acid fluoride, having a boiling point below about 300°C., of an element of Group II, IIIA, IV, V or VIB of the Periodic Table in the presence of fluorine at a temperature within the approximate range of 15° to 150°C for at least a period of time to effect a weight increase in the graphite, the relative amount of said Lewis acid fluoride and fluorine being between about 30 to 1 and about 2 to 1 on a weight basis.

3,962,134

MAGNESIUM-ALUMINUM-SILICATE-PHOSPHATE CATALYSIS FOR AMMONIALYTIC CLEAVAGE OF LACTAMS TO FORM OMEGA-AMINONITRILES

Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 420,879, Dec. 3, 1973, Pat. No. 3,886,196, which is a continuation-in-part of Ser. No. 329,557, Feb. 7, 1973, abandoned, which is a continuation of Ser. No. 879,635, Nov. 24, 1969, abandoned. This application Jan. 27, 1975, Ser. No. 544,647

Int. Cl.² B01J *27/14*

U.S. Cl. 252—437 12 Claims

1. A composition consisting essentially in combined form of magnesium, aluminum, phosphate, and silicate, on a substrate.

3,962,135

SHAPED CATALYST SUPPORT

Hamid Abdel Alafandi, Los Angeles, Calif., assignor to Filtrol Corporation, Los Angeles, Calif.

Filed Dec. 26, 1973, Ser. No. 428,615
Int. Cl.² B01J 29/00, 29/06
U.S. Cl. 252—450 6 Claims

1. A process of producing a porous particle which comprises acid-leaching a raw sub-bentonite clay with sulfuric or nitric or hydrochloric acid to remove alumina from the crystal lattice of said sub-bentonite and to produce a plastic clay material having an alumina content substantially less than the raw clay but retaining the montmorillonite crystal structure as evidenced by X-ray diffraction, shaping said acid-leached clay into a shaped particle, calcining said acid-leached particle at a temperature in the range of 900° F. to 1300° F., re-extracting said calcined particles with sulfuric, or nitric, or hydrochloric acid and thereby extracting an additional portion of the alumina remaining after said initial extraction and producing a shaped pellet having substantially the shape of the first-mentioned pellet and more than about 80% SiO_2 and calcining said re-extracted clay pellet at a temperature of about 1000° F. to about 1600° F.

3,962,136

CATALYST FOR PRODUCTION OF ETHYLENE OXIDE

Robert P. Nielsen, Houston, Tex., and John H. La Rochelle, Baton Rouge, La., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 471,398, May 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 317,349, Dec. 21, 1972, abandoned, which is a continuation-in-part of Ser. No. 216,188, Jan. 7, 1972, abandoned. This application Oct. 10, 1975, Ser. No. 621,270
Int. Cl.² B01J 21/04, 21/08, 23/04, 23/50
U.S. Cl. 252—454 29 Claims

1. A catalyst article comprising a porous refractory support having deposited on its exterior and pore surfaces from about 2% weight to about 20% by weight of silver and, coincidentally deposited with silver, a total of from about 4.0×10^{-6} gew per kilogram of total catalyst to about 8.0×10^{-3} gew per kilogram of total catalyst of alkali metal present in final form on the support in the form of an oxide in which the said oxide consists of an oxide of cesium or rubidium or mixtures thereof optionally combined with a minor proportion of the oxide of potassium relative to said rubidium and cesium.

3,962,137

PRODUCTION OF CO-CATALYST COMPOSITION OF INCREASED ABRASION RESISTANCE

Paul D. Taylor, Clinton, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 25, 1974, Ser. No. 526,986
Int. Cl.² B01J 29/16, 29/26
U.S. Cl. 252—456 4 Claims

1. A process for preparing an abrasion resistant, cocatalyst composition comprising vanadium tetroxide and non-porous colloidal silica particles, which process comprises (a) intimately mixing at a temperature of from about 25° to about 115°C an aqueous suspension which comprises from about 6 to about 30 percent by weight non-porous colloidal silica particles and from about 70 to about 94 percent by weight water with an aqueous solution of vanadyl salt which comprises from about 20 to about 60 percent by weight vanadyl salt and from about 40 to about 80 weight percent water, (b) calcining this mixture at a temperature greater than about 300°C to form a vanadium tetroxide and non-porous colloidal silica containing co-catalyst composition, (c) adding at a temperature of from about 25° to about 115°C an aqueous suspension which comprises from about 6 to about 30 percent by weight non-porous colloidal silica particles and from about 70 to about 94 percent by weight water to the calcined co-catalyst composition of step (b), and (d) drying this composite co-catalyst at a temperature of from about 25° to about 115°C, wherein in said process from about 30 to about 70 percent by weight of the total amount of the non-porous colloidal silica is added in step (a) and correspondingly from about 70 to about 30 percent by weight of the total amount of the non-porous colloidal silica is added in step (c).

3,962,138

COBALT-OXIDE-BASED CATALYTIC SUBSTANCES FOR THE OXIDATION OF AMMONIA

Jean-Louis Ray, Fontaine, Saone, and Robert Laugier, Fresnes, both of France, assignors to Rhone-Progil, Courbevoie, France

Filed Mar. 18, 1974, Ser. No. 451,882
Claims priority, application France, Mar. 20, 1973, 73.09862
Int. Cl.² B01J 21/04, 23/10, 23/80
U.S. Cl. 252—462 4 Claims

1. Shaped catalytic substances for the oxidation of ammonia, for the production of nitric acid, having a high mechanical strength and a long life, characterized in that they are devoid of alkali metals and formed of a mixture of calcined bodies of 60-95% by weight tricobalt tetraoxide, 5–15% by weight of aluminum oxide and 0 to 25% by weight of an oxide of a metal selected from the group consisting of thorium, cerium, zinc and cadmium.

3,962,139

CATALYST PREPARATION

Cornelis G. M. van de Moesdijk, Elsloo; Joseph J. F. Scholten, Sittard, and Jacobus J. M. G. Eurlings, Valkenburg, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Nov. 28, 1973, Ser. No. 419,883
Claims priority, application United Kingdom, Nov. 30, 1972, 55448/72
Int. Cl.² B01J 23/08
U.S. Cl. 252—463 14 Claims

1. Process for preparation of powdery alloys of two or more metals, which are catalysts whose catalytically active component consists of an alloy of two or more metals, this process being characterized in that one of the metals is, as a powder or in the finely divided state on a carrier material, added to a liquid acidic medium of a pH between 1 and 5 at a temperature of up to the boiling point of the medium at the prevailing pressure, and is gold, iridium, copper, osmium, palladium, platinum, rhodium, ruthenium or silver, which medium contains a dissolved compound of at least one other metal to be alloyed whereupon the metal particles are contacted with a reducing gas or reducing liquid said other metal being germanium, rhenium or antimony.

3,962,140

NICKEL-COPPER-MOLYBDENUM METHANATION CATALYST

William R. Alcorn, Rocky River, and Leonard A. Cullo, Solon, both of Ohio, assignors to The Harshaw Chemical Company, Cleveland, Ohio

Filed Mar. 10, 1975, Ser. No. 556,808
Int. Cl.² B01J 23/84
U.S. Cl. 252—470 3 Claims

1. A supported methanation catalyst for the production of gaseous hydrocarbon mixtures, composed predominantly of methane with up to about 5 percent of ethane, on a moisture-free basis, said catalyst prepared by reduction with hydrogen of a complex of oxides on a catalyst support, said complex defined by the formula $Ni_aCu_bMo_cO_x$, wherein a, b and c are numbers so chosen that when b is unity, a and c are in the range from about 1 to about 9, and x is a number determined by the valence requirements of the other elements present, wherein the support comprises at least 50 percent of the total weight of the catalyst, the remainder including from about 5%

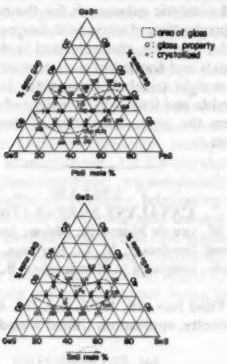
to about 20% by weight of molybdenum oxide, based on total catalyst, from about 5% to about 40% by weight of nickel oxide, and copper oxide, wherein the weight ratio of the nickel oxide to the copper oxide is in the range from about 1:1 and 9:1.

3,962,141

VITREOUS PHOTOCONDUCTIVE MATERIAL

Masayoshi Inoue, Sakai; Shoji Tsuchihashi, and Yoji Kawamoto, both of Kobe, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 22, 1974, Ser. No. 463,178
Claims priority, application Japan, Apr. 24, 1973, 48-47005
Int. Cl.² H01L *31/00*
U.S. Cl. 252—501 1 Claim



1. Vitreous photoconductive material having a composition of the formula $xGeS_2$—$yGeS$—zMS, where M is a metal other than germanium in Group IVa of the Periodic Table, x, y and z represent mole percentages, and $x+y+z=100$, x, y and z having numerical values in the ranges $15<x<50$, $5<y<70$, $0<z<55$ when M is lead and in the ranges $20<x<50$, $15<y<70$, $0<z<55$ when M is tin.

3,962,142

ELECTRICALLY CONDUCTING CONCRETE

Alan Freeman, and William Hymers, Chelmsford, both of England, assignors to The Marconi Company Limited, Chelmsford, England

Filed Feb. 7, 1974, Ser. No. 440,547
Claims priority, application United Kingdom, Feb. 7, 1973, 5956/73; July 6, 1973, 32442/73
Int. Cl.² H01B *1/04*
U.S. Cl. 252—503 32 Claims

1. A setable composition for use as a structural material comprising a cementitious material and an aggregate, wherein said aggregate contains quantities of carbonaceous material ranging in size between relatively large carbonaceous particulate material and relatively small carbonaceous particulate material, said aggregate constituting at least 20% by weight of the solid contents of the composition, and wherein the aggregate consists of particles of a size distribution such that the spectrum of sizes falls within the extreme limits of the combined specifications of British Standards 882, German Standards DIN 1045 and American Standards ASTMC 33, relating to the spectrum of particle sizes recommended for conventional aggregates in cementitious compositions.

3,962,143

REACTIVELY-BONDED THICK-FILM INK

Thomas Tipton Hitch, Trenton, and Thomas Ernest McCurdy, Belle Mead, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 27, 1974, Ser. No. 455,371
Int. Cl.² H01B *1/02*; H01C *1/02*; H01B *1/06*; H01C *1/06*
U.S. Cl. 252—514 4 Claims

1. A reactively-bonded thick-film conductive ink composition comprising about 10–20% by weight of a vehicle, and 90–80% by weight of solids consisting essentially of about 0.5–8% by weight of cupric oxide, and 99.5–92% by weight of finely divided silver and no glass frit.

3,962,144

PROCESS FOR MAKING A VOLTAGE DEPENDENT RESISTOR

Mikio Matsuura, Hirakata; Michio Matsuoka, Ibaragi, and Osamu Makino, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Oct. 16, 1974, Ser. No. 515,360
Claims priority, application Japan, Oct. 19, 1973, 48-118219
Int. Cl.² H01B *1/08*
U.S. Cl. 252—517 16 Claims

1. In a process for making a bulk-type voltage-dependent resistor in which zinc oxide (ZnO) powder and additives are admixed to form a sintered body composition having as the main constituent, zinc oxide, and in which the mixture is formed into a resistor body, the body is sintered, and electrodes are applied to the opposite surfaces of the sintered body, the improvement comprising the step of, prior to sintering and admixture with said additives, heat-treating the zinc oxide powder at a temperature of from 500° to 1000°C.

3,962,145

HIGH TEMPERATURE THERMISTOR COMPOSITION

Yoshihiro Matsuo, Neyagawa, and Shigeru Hayakawa, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 18, 1974, Ser. No. 480,547
Claims priority, application Japan, June 20, 1973, 48-70318; June 20, 1973, 48-70317; Dec. 17, 1973, 48-142288; Dec. 17, 1973, 48-142289
Int. Cl.² H01B *1/08*
U.S. Cl. 252—519 19 Claims

1. A high temperature thermistor composition comprising a spinel-type solid solution having the chemical formula of $(Mg_{[p_1]}Ni_{[p_2]}Co_{[p_3]}Mn_{[p_4]}Zn_{[p_5]})$ $(Al_{[z_1]}Cr_{[y]}Fe_{[z_2]}Mn_{[z_3]}Co_{[z_4]}Sb_{[z_5]})_2O_4$, wherein $p_1+p_2+p_3+p_4+p_5=1$, $0 \leqq p_n \leqq 1$ (n=1, 2, 3, 4, 5), $z_1+z_2+z_3+z_4+z_5=z$, $x+y+z=1$, $0.005 \leqq x \leqq 0.80$, $0.03 \leqq y \leqq 0.95$, $0.005 \leqq z \leqq 0.70$ and $0 \leqq z_n \leqq 0.70$ (n=1,2,3,4).

3,962,146

PTC THERMISTOR COMPOSITION AND METHOD OF MAKING THE SAME

Tomizo Matsuoka, Neyagawa; Masanori Fujimura, Hirakata, and Yoshihiro Matsuo, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sept. 18, 1974, Ser. No. 506,963
Claims priority, application Japan, Sept. 24, 1973, 48-107393
Int. Cl.² H01B *1/08*
U.S. Cl. 252—520 7 Claims

1. A PTC thermistor composition consisting essentially of a first oxide selected from the group consisting of barium oxide, barium strontium oxide, and barium lead oxide, and, on the basis of 1.00 mole of said first oxide, (A) 0.90 to 1.05 mole of an oxide selected from the group consisting of titanium dioxide and titanium stannic dioxide, (B) 0.0005 to 0.002 mole of an oxide selected from the group consisting of rare

earth oxides, Nb_2O_5, Ta_2O_5, Bi_2O_3 and Sb_2O_3 and (C) 0.0005 to 0.10 mole of hafnium dioxide.

3,962,147

PERFUME COMPOSITION CONTAINING 6,10 DIMETHYL - SPIRO [4.5]DECANE-TYPE COMPOUNDS

Bruno Maurer, Collonge-Bellerive; Michel G. Frachebourd, and Gunther Ohloff, both of Bernex-Geneva, all of Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

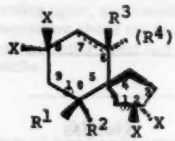
Division of Ser. No. 363,187, May 23, 1973, Pat. No. 3,923,873. This application May 30, 1975, Ser. No. 582,265

Claims priority, application Luxemburg, July 17, 1972, 65737; May 29, 1972, 65431

Int. Cl.² C11B *9/00*; A61K *7/46*

U.S. Cl. 252—522 **1 Claim**

1. A perfume composition which comprises at least one of the compounds of the formula



containing a single or a double bond in the position indicated by the dotted line and wherein the index *n* represents the intergers zero or 1, one of the pairs of symbols *X* represents when said symbols are taken together, an oxygen atom or, when said symbols are taken separately, a hydroxyl or an O-acyl group and a hydrogen atom, and the other pair represents two hydrogen atoms and wherein

i. one of the symbols R^1 and R^2 represents a lower alkyl group and the other is a hydrogen atom and R^3 represents a lower alkyl group when the index *n* is zero; or

ii. each of the symbols R^1, R^2, R^3 and R^4 represents a lower alkyl group or a hydrogen atom provided however that the pairs

R^1 and R^2, and

R^3 and R^4, respectively,

cannot simultaneously comprise more than one alkyl group, and an inert diluent or a carrier.

3,962,148

ODORANT COMPOSITIONS CONTAINING 4,4,6-TRIMETHYL-2-CYCLOHEXENONE

Alan R. Hochstetler, Franklin Lakes, and Frederick Louis Schmitt, Holmdell, both of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed July 3, 1975, Ser. No. 592,963

Int. Cl.² C11B *9/00*

U.S. Cl. 252—522 **8 Claims**

1. A fragrance composition comprising an olfactorily effective amount of 4,4,6-trimethyl-2-cyclohexenone and at least one other olfactory agent.

3,962,149

NON-PHOSPHATE SPRAY DRIED DETERGENTS CONTAINING DICARBOXYLIC ACID SALTS

William Chirash, New Providence; Alfred Edgar Haase, Fanwood, and Andrew Henry Limekiller, Belle Mead, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 12, 1973, Ser. No. 406,015

Int. Cl.² C11D *1/83, 3/20, 11/02, 17/06*

U.S. Cl. 252—540 **18 Claims**

1. A spray dried, nonphosphate detergent bead composition post treated with a liquid spray containing polyethoxylated nonionic organic detergent in an amount of from about 3 to about 5 percent by weight, the base spray dried bead composition consisting essentially of, approximately by weight,

a. 5–25% of an alkali metal salt of a dibasic acid selected from the group consisting of oxalic, malonic, succinic, glutaric, adipic, pimelic,, suberic, azelaic and sebacic acids,

b. up to 35% of

1. anionic soap or synthetic organic sulfated or sulfonated detergent,

2. zwitterionic, or

3. amphoteric detergent material,

c. 0 to 2% of said nonionic detergent,

d. 0 to 7% of an alkali metal silicate,

e. the balance being sodium sulfate, said final detergent bead composition containing up to about 6 percent of said nonionic detergent, and said final composition being adapted to yield in aqueous solution a pH of about 7 to 9.

3,962,150

FOAM PRODUCING CLEANSING COMPOSITIONS

Leonard J. Viola, Yonkers, N.Y., assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed Apr. 10, 1974, Ser. No. 459,651

Int. Cl.² C11D *1/58*

U.S. Cl. 252—542 **10 Claims**

1. An aqueous, non-pressurized, foam-producing, homogenous, skin-cleansing composition consisting essentially of from 0.5 to 14.5% of a pharmaceutically acceptable nonionic surfactant and from 0.5 to 14.5% of a pharmaceutically acceptable aanionic surfactant, the total surfactant concentration ranging from 1 **anionic to** 15%; from 1 to 15% of an alcoholic solvent selected from the group consisting of monohydric alcohols having from 2 to 3 carbon atoms, glycol ethers, polyhydric glycols and mixtures thereof; and from 70 to 98% water.

8. An aqueous, non-pressurized, aerated foam consisting essentially of a mixture of air and an aqueous, non-pressurized, foam-producing, homogeneous, skin-cleansing composition having from 0.5 to 14.5% of a pharmaceutically acceptable nonionic surfactant and from 0.5 to 14.5% of a pharmaceutically acceptable anionic surfactant, the total surfactant concentration ranging from 1 to 15%, from 1 to 15% of an alcoholic solvent selected from the group consisting of monohydric alcohols having from 2 to 3 carbon atoms, glycol ethers, polyhydric glycols and mixtures thereof, and from 70 to 98% water; said foam having a density of from 0.01 to 0.10 gm/ml.

3,962,151

SOLVENT TYPE CLEANERS

Abraham Dekker, and Albert Willems, both of Maarssen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

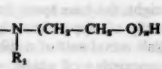
Filed Aug. 6, 1973, Ser. No. 385,945

Claims priority, application United Kingdom, Aug. 11, 1972, 37586/72

Int. Cl.² C11D *1/44, 3/43*

U.S. Cl. 252—548 **2 Claims**

1. A non-aqueous solvent type cleaner composition with quick breaking emulsion properties for cleaning metal surfaces, concrete structures, brickwork and the like, consisting essentially of 94.0–98.5% by weight of a non-chlorinated hydrocarbon solvent comprising a kerosene distillate with a flash point of at least 55°C, and about 0.2–5.0% by weight of a cationic emulsifier having the formula:



in which R is an alkyl or alkenyl group containing 8–25 carbon atoms; n is a number from 1–5; and R^1 is either $(CH_2—CH_2—O)_mH$, m being from 0–5, or an alkyl or alkenyl group containing 8–25 carbon atoms, and 0.5–1.0% by weight of an ethylene oxide condensate nonionic surface-active compound comprising a mixture of a low ethoxylated compound having up to 5 ethylene oxide units and a high ethoxylated compound having from 8–25 ethylene oxide units, in a weight ratio of from 2:1 to 15:1.

3,962,152

DETERGENT COMPOSITIONS HAVING IMPROVED SOIL RELEASE PROPERTIES

Charles Henry Nicol, Hamilton, and Hugh Robert Hays, Harrison, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 25, 1974, Ser. No. 483,185
Int. Cl.² C11D 7/26
U.S. Cl. 252—551 **8 Claims**

1. A detergent composition having improved soil release properties consisting essentially of:

a. from about 2 to about 95% by weight of a member selected from the group consisting of water-soluble anionic, nonionic, zwitterionic and ampholytic surface-active agents and mixtures thereof; and

b. from about 0.05 to about 25% by weight of a soil release polymer comprising ethylene terephthalate and polyethylene oxide terephthalate at a molar ratio of ethylene terephthalate to polyethylene oxide terephthalate of from about 25:75 to about 35:65, said polyethylene oxide terephthalate containing polyethylene oxide linking units having a molecular weight of from about 300 to 700, the molecular weight of said soil release polymer being in the range of from about 25,000 to about 55,000.

3,962,153

VERY HIGHLY STRETCHED POLYTETRAFLUOROETHYLENE AND PROCESS THEREFOR

Robert Walton Gore, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Continuation-in-part of Ser. No. 39,753, May 21, 1970, abandoned. This application June 14, 1973, Ser. No. 369,814
Int. Cl.² C08J 9/00; B29D 27/00
U.S. Cl. 260—2.5 R **10 Claims**

1. A porous product consisting essentially of polytetrafluoroethylene produced by a process comprising:

a. stretching an unsintered extrudate of said polymer made by a paste-forming extrusion technique, said stretching being performed after removal of lubricant extrusion aid from said extrudate;

b. said stretching being performed at a rate exceeding about 2000% per second;

c. said stretching being performed at an elevated temperature but below the melt point of said polymer; and,

d. said extrudate being stretched to such an extent that the final length of the stretched product after stretching exceeds 50 times the original length of said extrudate prior to stretching.

3,962,154

METHOD FOR PRODUCING AN IMPROVED MOLDED THERMOPLASTIC ARTICLE

Ernst A. Egli, Carol Stream, Ill., assignor to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 149,022, June 1, 1971, abandoned. This application May 31, 1974, Ser. No. 474,890
Int. Cl.² C08J 9/04; C08K 3/10
U.S. Cl. 260—2.5 HA **5 Claims**

1. A foamed thermoplastic polymeric resinous article substantially free of swirl-patterns in its surface comprising:

a thermoplastic polymeric resinous material selected from the group consisting of polystyrene, polypropylene, and polyethylene having a finely divided inorganic material comprising about 30% zinc sulfide and about 70% barium sulfate intimately associated therewith in a range between about 0.001% and about 50% based upon the total weight of the thermoplastic polymeric resin and the inorganic material.

3,962,155

MOLDED FOAMS AND PROCESS FOR PRODUCING THE SAME

Teruyoshi Usamoto, Higashi-Osaka; Kozo Tsuji, Ibaragi, and Takami Sato, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka and Hayashibara Biochemical Laboratories, Incorporated, both of, Japan

Filed Jan. 20, 1975, Ser. No. 542,686
Claims priority, application Japan, Feb. 6, 1974, 49-15636
Int. Cl.² C08J 9/00
U.S. Cl. 260—2.5 R **21 Claims**

1. A molded article comprising foamed pullulan, foamed modified pullulan prepared by subjecting pullulan to acetylation, hydroxyacetylation, dialdehydation, nitration, carboxyalkylation, esterification with an aliphatic or aromatic carboxylic acid, alkyl-etherification, hydroxyalkyl-etherification or carboxyalkyl-etherification, or is a graft copolymer prepared by grafting a vinyl compound on pullulan, or a foamed mixture thereof.

3,962,156

TACKIFIER FOR RUBBER

William H. Harrop, Downingtown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed July 15, 1974, Ser. No. 488,379
Int. Cl.² C08L 7/00, 9/02, 9/06, 63/00
U.S. Cl. 260—5 **4 Claims**

1. A composition comprising a synthetic rubber selected from the group consisting of polybutadiene, butadiene-styrene copolymers, butadiene-acrylonitrile copolymers, butadiene-styrene-acrylonitrile terpolymers, polyisoprene, polychloroprene, isobutylene homopolymers and copolymers, ethylene propylene rubbers, ethylene-propylene-diene terpolymer rubbers, halogenated olefin polymers, propylene oxide rubbers, or mixtures of said synthetic rubber with natural rubber, and as a tackifier for the rubber, from about 2 to about 20 parts by weight per 100 parts rubber of the composition prepared by a process comprising reacting about 0.7 to 1.3 mole parts aldehyde with about 0.50 to 0.95 mole parts of predominantly mono-substituted phenol and about 0.50 to 0.05 mole parts of aliphatic or cycloaliphatic polyamine containing at least two primary amine groups in the presence of acid catalyst.

3,962,157

POLYPROPYLENE COMPOSITION MODIFIED WITH POROUS FILLER AND A RADICAL GENERATING AGENT

Seikou Nakano; Yukitaka Goto, and Takayuki Inoue, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Japan

Filed Aug. 26, 1974, Ser. No. 500,368
Claims priority, application Japan, Aug. 31, 1973, 48-97207
Int. Cl.² C08L *1/02*
U.S. Cl. 260—17.4 R 9 Claims

1. A process for preparing a modified polyolefin composition for shaping use which comprises adding a radical generating agent in a quantity of not greater than 5% by weight to 10 to 80% by weight of a porous filler having a particle size not greater than 5 mesh and 90 to 20% by weight of a polyolefin selected from the group consisting of propylene homopolymer and ethylene-propylene copolymers with an ethylene content not greater than 15%, all of said quantities of these materials being based on the total weight of the polyolefin, porous filler and radical generating agent, and kneading the resulting mixture at a high temperature above the decomposition temperature of the radical generating agent and the melting temperature of the polyolefin.

3,962,158

HYDROPHILIC POLYMER MEMBRANES OF POLYVINYL ALCOHOL AND CHITOSAN

Seiichi Mima, Toyonaka; Susumu Yoshikawa, and Masaru Miya, both of Ikeda, all of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Apr. 1, 1975, Ser. No. 563,962
Claims priority, application Japan, Apr. 5, 1974, 49-39167
Int. Cl.³ B01D *13/00*; C08L *5/08*
U.S. Cl. 260—17.4 CL 8 Claims

1. A hydrophilic polymer membrane which comprises a blend of polyvinyl alcohol and chitosan wherein said polyvinyl alcohol contains in its molecule at least 85 mol % vinyl alcohol units and said chitosan is present in an amount of 5–60% by weight based on said blend.

3,962,159

GRAFT COPOLYMERS OF A POLYAMIDEAMINE SUBSTRATE AND STARCH, AND METHOD OF MAKING SAME

Dilip K. Ray-Chaudhuri, Somerville, and Carmine P. Iovine, Somerset, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Feb. 3, 1975, Ser. No. 546,520
Int. Cl.² C08L *3/02*, *3/04*
U.S. Cl. 260—17.4 GC 10 Claims

1. A graft copolymer comprising the condensation product obtained by the reaction of:

a. a polyamideamine substrate having a total amine to carboxylic equivalent ratio of 1.25:1 to 3.00:1 and a reduced viscosity in methanol at 1% weight by volume of 0.05 to 0.20 dl/gm., said polyamideamine substrate comprising the reaction product of a polyalkylene polyamine, a dibasic reagent and optionally at least one member selected from the group consisting of alkyl lactams, acrylic and methacrylic esters and beta-lactones,

b. a water dispersible starch, and

c. a condensing reagent selected from the group consisting of epichlorohydrin, epibromohydrin, 1,3-dichloropropanol, 1,2-dichloroethane, 1,4-dichloro-2-butene, divinyl sulfone, methylene bisacrylamide, glyoxal and divinyl ether, wherein the weight ratio of starch to polyamideamine is within the range of 1:9 to 9:1 and the amount of condensing reagent corresponds to 0.75 to 2.0 moles per equivalent of amine in the polyamideamine substrate.

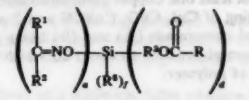
3,962,160

NOVEL ORGANOFUNCTIONAL (KETOXIMINO) SILANES AND ROOM TEMPERATURE, VULCANIZABLE COMPOSITIONS CONTAINING THE SAME

Melvin D. Beers, Elnora; Abe Berger, Schenectady; Stephen B. Hamilton, Schenectady, and Terry G. Selin, Schenectady, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Dec. 10, 1974, Ser. No. 531,343
Int. Cl.² C08L *91/00*
U.S. Cl. 260—18 S 38 Claims

1. A compound having the general formula,



wherein R is a radical having not more than about 8 carbon atoms and is selected from the group consisting of hydrocarbyl, halohydrocarbyl, nitrohydrocarbyl, alkoxyhydrocarbyl and cyanoalkyl, R^1 and R^2 are the same or different and are selected from the group consisting of C_1–C_8 alkyl and C_1–C_8 haloalkyl, R^3 is at least one divalent radical having from about 2 to 8 carbon atoms selected from the group consisting of a divalent saturated hydrocarbon, a halogen substituted divalent saturated hydrocarbon and an alkoxy substituted divalent saturated hydrocarbon, R^4 is at least one radical selected from the same group as R, *a* is a number from 1 to 3, *d* is a number from 1 to 3, *f* is a number from 0 to 2 and the sum of *a*, *d* and *f* is 4.

3,962,161

CROSSLINKING OF DIOLEFINIC POLYMERS USING DIACYL NITRILE OXIDES

Louis E. Trapasso, Somerset, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Mar. 17, 1975, Ser. No. 558,976
Int. Cl.² C08G *18/04*, *18/00*; C08F-*8/00*; C08L *91/00*
U.S. Cl. 260—22 TN 9 Claims

1. A process for crosslinking an olefinic group-containing polymer, which comprises blending with said polymer at least one mole of nitromethane and at least three equivalents of a polyisocyanate for each olefinic group to be crosslinked, and allowing the mixture to react.

3,962,162

RIGIDLY BONDED GREEN CERAMICS AND PROCESSES

Horst W. Schmank, Ringold, Ga., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 19, 1974, Ser. No. 443,298
Int. Cl.² C08G *63/20*; C08K *3/00*
U.S. Cl. 260—22 CB 9 Claims

1. A formable green refractory composition flowable at temperatures of 20° to 40° C., curing to become rigid and shape-retentive at elevated temperatures below about 200° C. and firing at temperatures above at least 600° C. to refractory, said composition being thermosetting and comprising in percent by weight:

a. about 60 to 98% refractory powder;

b. about 1 to 30% linear unsaturated polyester having molecular weight of about 400 to 10,000 and hydroxyl numbers from about 5 to about 150;

c. about ⅛–12% unsaturated vinyl monomer for crosslinking and dilution;

d. about 0.02 to 0.5% catalyst for free radical polymerization;

e. about 0.5 to 5% internal mold release compounds and

f. about 0.5 to 7% volatile mold release and lubricant miscible with said saturated polyester and said vinyl monomer.

3,962,163
SMOKE RETARDANT VINYL CHLORIDE AND VINYLIDENE CHLORIDE POLYMER COMPOSITIONS

Elmer D. Dickens, Jr., Richfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 30, 1974, Ser. No. 537,061
Int. Cl.² C08L 91/00
U.S. Cl. 260—23 XA 14 Claims

1. A smoke retardant composition comprising a vinyl chloride or vinylidene chloride polymer together with (A) at least one nickel compound selected from the group consisting of $NiCO_3$, $NiCrO_4$, $NiMoO_4$, NiO, $NiSO_4$, $NiSnO_3$ and nickel stearate and (B) at least one copper compound selected from the group consisting of CuI, CuO, CuSCN and 2-aminothiophenol Cu(I), said compounds (A) and (B) being present in a total amount from about 0.25 to about 20 weight parts per 100 weight parts of polymer.

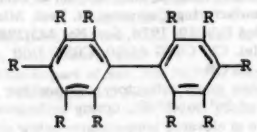
3,962,164
SELF-EXTINGUISHING ACRYLONITRILE-BUTADIENE-STYRENE MOULDING COMPOSITION

Hans Eberhard Praetzel, and Herbert Jenkner, both of Cologne, Germany, assignors to Chemische Fabrik Kalk GmbH, Germany

Continuation-in-part of Ser. No. 182,542, Sept. 21, 1971, Pat. No. 3,830,766. This application July 3, 1974, Ser. No. 485,558
Claims priority, application Germany, Sept. 23, 1970, 2046795
Int. Cl.² C08K 5/59; C09K 3/28
U.S. Cl. 260—28.5 B 7 Claims

1. A self-extinguishing moulding composition comprising acrylonitrile-butadiene-styrene polymers and an additive comprising:

a. an aromatic compound having the formula



wherein R is selected from the group consisting of hydrogen, bromine, chlorine and alkyl having 1 to 3 carbon atoms; provided that at least two of the R's are bromine;

b. antimony trioxide or antimony oxychloride; and

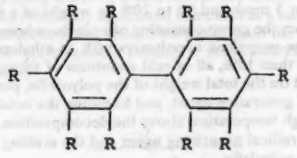
c. an organochloro compound selected from the group consisting of chloroparaffins having 45 to 72 percent by weight chlorine, hexachlorocyclopentadiene and its dimer, and chlorinated polyvinyl chloride;

said aromatic bromine compound being present in amount of about 1 to 15 percent by weight; said antimony compound being present in amount of about 1 to 10 percent by weight; and said organochloro compound being present in amount of about 0 to 5 percent by weight.

4. An additive for flame-proofing acrylonitrile-butadiene-styrene polymers comprising:

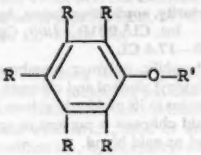
a. about 1 to 15 parts of an aromatic bromine compound selected from the group consisting of

(1)



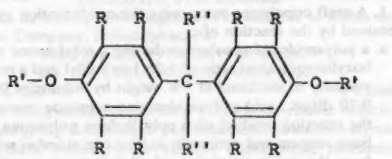
wherein R is selected from the group consisting of hydrogen, bromine, chlorine and alkyl having 1 to 3 carbon atoms; provided that at least two of the R's are bromine;

(2)



wherein R' is selected from the group consisting of alkyl having 1 to 3 carbon atoms, alkenyl having 2 to 4 carbon atoms, halogenated alkyl having 1 to 3 carbon atoms and a maximum of three halogen atoms, phenyl and halogenated phenyl; R is as previously defined; provided that at least one R is bromine; and

(3)



wherein R'' is hydrogen or alkyl having 1 to 3 carbon atoms; R and R' are as previously defined; provided that at least one R is bromine;

b. about 1 to 10 parts of antimony trioxide or antimony oxychloride; and

c. about 0 to 5 parts of an organochloro compound selected from the group consisting of chloroparaffins having 45 to 72 percent by weight chlorine, hexachlorocyclopentadiene and its dimer, and chlorinated polyvinyl chloride.

3,962,165

QUATERNARY AMMONIUM SALT-CONTAINING RESIN COMPOSITIONS

Joseph F. Bosso, Lower Burrell, and Marco Wismer, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 277,697, Aug. 3, 1972, abandoned, which is a continuation-in-part of applications Ser. No. 100,825, Dec. 22, 1970, abandoned, Ser. No. 100,834, Dec. 22, 1970, abandoned, Ser. No. 129,267, Mar. 29, 1971, abandoned, Ser. No. 158,063, June 29, 1971, abandoned, and Ser. No. 167,470, July 29, 1971, said Ser. No. 158,063 is a division of Ser. No. 772,366, Oct. 31, 1968, abandoned. Said Ser. No. 167,470 is a continuation-in-part of Ser. No. 840,847, July 10, 1969, abandoned and Ser. No. 840,848, July 10, 1969, abandoned, and a continuation-in-part of said Ser. No. 100,825 and said Ser. No. 100,834, both being a continuation-in-part of Ser. No. 56,730, July 20, 1970, abandoned, which is a continuation-in-part of said Ser. No. 772,366, Oct. 31, 1968, abandoned.

This application Apr. 4, 1974, Ser. No. 457,881

Int. Cl.[2] C08G *30/16, 51/24*

U.S. Cl. 260—29.2 EP **16 Claims**

1. A boron-free, water-dispersible, quaternary ammonium salt-containing resin suitable for use in electrodeposition comprising the reaction product of:

A. a polyglycidyl ether of a polyphenol, and

B. an amine acid salt,

the weight ratio of said amine acid salt to said polyglycidyl ether being from about one part to about 50 parts by weight of salt per 100 parts by weight of said polyglycidyl ether, said amine salt reacted with said polyglycidyl ether of a polyphenol in an amount and at a temperature below about 110°C. and sufficient to provide a quaternary ammonium salt-containing, water-dispersible resin.

3,962,166

STABLE UREA-FORMALDEHYDE COMPOSITIONS

Alex F. Gordon, Black Mountain, N.C., assignor to United Merchants and Manufacturers, Inc., New York, N.Y.

Continuation of Ser. No. 259,770, June 5, 1972, abandoned. This application Nov. 22, 1974, Ser. No. 526,083

Int. Cl.[2] C08L *61/20*

U.S. Cl. 260—29.4 R **5 Claims**

1. A method for making a stable mixture of a methylol urea and water, said methylolurea having a urea to formaldehyde ratio in the range from about 1:1.4 to 1:2.8, a free formaldehyde content of less than about 3% and a concentration of methylol urea in excess of about 60% based on the weight of the mixture consisting essentially of the following steps:

A. adjusting the pH of an aqueous mixture of urea and formaldehyde which has a urea to formaldehyde ratio greater than about 1:5 and a solids content in the range from about 20 to 60% to a value greater than about 10;

B. heating the mixture at a temperature in the range from about 100° to 230°F for about 1 to 3 hours;

C. adjusting the ratio of urea to formaldehyde by adding urea to a value in the range from about 1:1.4 to 1:2.8 during heating step (B); and

D. cooling the mixture to room temperature and adjusting the pH of the cool mixture to a value in the range from about 7.5 to 8.0.

3,962,167

METAL DECORATING AND AQUEOUS COATING COMPOSITION COMPRISING COPOLYMER AND AMINOPLAST

Richard Martorano, Marlton, N.J.; William H. Brendley, Jr., Hatboro, and Thomas H. Haag, Feasterville, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 377,685, July 9, 1973, abandoned, and a continuation-in-part of Ser. No. 377,685, , which is a continuation-in-part of Ser. No. 130,808, April 2, 1971, abandoned. This application Nov. 27, 1974, Ser. No. 527,792

Int. Cl.[2] C08L *61/20*

U.S. Cl. 260—29.4 UA **6 Claims**

1. A pigmented or unpigmented thermosettable composition adapted for direct-roller coating of metals comprising an alkaline aqueous blend having a binder consisting essentialy of:

A. a latex of a water-insoluble addition copolymer of (1) a monovinyl aromatic monomer, (2) at least one ester of acrylic or methacrylic acid, (3) at lest one ethylenically unsaturated monomer having an amide or a hydroxyl group, and (4) an ethylenically unsaturated monomer having a carboxyl group, the amount of (3) being from 1.5 to 5 percent and the amount of (4) being from .5 to 2 percent, based on the total weight of monomers, the Tg of the copolymer being below 0° C., and

B. a water-soluble urea-formaldehyde reaction product or a water-soluble methanol or ethanol ether thereof,

the weight ratio of A to B on a solids basis being from 35:65 to 65:35, the minimum film-forming temperature of the composition being no higher than about 15° C., and the solids content of the composition being between 40 and 80 percent.

3,962,168

NON-SKID COATING AND METHOD

Hugh K. Edwards, 5228 Page, St. Louis, Mo. 63112

Filed Jan. 24, 1974, Ser. No. 436,190

Int. Cl.[2] C08J *3/02, 3/10;* **C08L** *35/02, 35/06*

U.S. Cl. 260—29.6 RW **15 Claims**

1. A resilient coating material comprising a stable emulsion of a styrene acrylate polymer having a molecular weight of between about 800 and 1000 and a polyvinyl acetate-acrylic co-polymer having a molecular weight between about 100,000 and 120,000 in a dispersible aqueous-organic co-solvent system, the styrene acrylate polymer being present in proportions of between about 4 and 8% by weight and the polyvinyl acetate-acrylic co-polymer being present in proportions of between about 20 and 35% by weight, the co-solvent system being about 50 to 75% by weight of the emulsion.

3,962,169

FLUOROELASTOMER LATEX CONTAINING LITHIUM ION AND A CREAMING AGENT AND PROCESS FOR PREPARATION THEREOF

Paul Jeffrey Arruda, Wilmington, Del., and Charles Launcelot Barber, Jr., Chester, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 488,528, July 15, 1974, abandoned. This application May 27, 1975, Ser. No. 581,150

Int. Cl.[2] C08L *27/16*

U.S. Cl. 260—29.6 F **20 Claims**

1. A process for preparing a fluoroelastomer latex which comprises

A. forming an aqueous emulsion of monomers capable of being copolymerized into a fluoroelastomer, said emulsion comprising

1. vinylidene fluoride plus at least one other fluorine-containing monomer in an amount such that the total monomer content of the emulsion is about 10–35% by weight,

2. about 30 to 100 parts by weight of lithium ion per million parts of the emulsion, and

3. an inorganic free-radical initiator in an amount which permits the free-radical emulsion copolymerization of the monomers,

B. subjecting said emulsion to free-radical emulsion copolymerization in a reaction zone at a temperature of about 50°–135°C. and a pressure of about 7–140 kg./cm.² to form a fluoroelastomer latex, and

C. adding a creaming agent to the resulting fluoroelastomer latex in an amount equal to about 0.07–3.0 grams of creaming agent per 100 grams of fluoroelastomer present.

3,962,170

FLAME RESISTANT VINYLIDENE CHLORIDE COPOLYMER LATICES AND ARTICLES MADE THEREFROM

Adolf Antony Mally, Kinross, Scotland, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 16, 1974, Ser. No. 515,386

Claims priority, application United Kingdom, Oct. 30, 1973, 50473/73

Int. Cl.² C08K *3/28, 5/52*

U.S. Cl. 260—29.7 H **4 Claims**

1. A flame resistant composition consisting essentially of:

A. a latex prepared from a monomer mixture of (1) 15% to 45% by weight styrene, (2) 25% to 50% by weight butadiene, (3) 25% to 40% by weight vinylidene chloride and (4) 0.5 to 10% copolymerizable carboxylic acid, and

B. a flame retardant compound selected from the group consisting of ammonium bromide and tris dibromopropyl phosphate.

3,962,171

COMPOSITION FOR PROTECTING SURFACES

James D. Robbins, Ada, Mich., assignor to McGarry & Waters, Grand Rapids, Mich.

Continuation-in-part of Ser. No. 337,667, March 2, 1973, abandoned. This application Feb. 19, 1975, Ser. No. 550,968

Int. Cl.² C08K *5/02;* **B32B** *15/08*

U.S. Cl. 260—33.8 F **10 Claims**

1. A protective coating composition for application to decorative and other surfaces, said coating composition comprising:

50 to 5 parts by weight of a solution of 10 to 30 parts by weight of polytetrafluoroethylene and 90 to 70 parts of a fluorinated hydrocarbon solvent therefor, said polytetrafluoroethylene having a particle size less than about 30 microns before dissolution into said solvent and forming a solution therewith;

50 to 95 parts by weight of a volatile diluent of a halogenated hydrocarbon having 1 to 4 carbon atoms and a boiling point in the range of 25°–100°C, said polytetrafluoroethylene solution being finely and evenly dispersed in said diluent;

said diluent being present in sufficient amounts to evenly and thinly spread said composition onto surfaces when sprayed, and in amounts insufficient to cause settling of said polytetrafluoroethylene solution in a relatively short period of time following agitation, said composition, when sprayed onto a surface, forms a transparent coating after drying and buffing.

3,962,172

GLASS FIBER REINFORCED POLYAMIDE MOLDING MATERIAL OF HIGH IMPACT STRENGTH

Rolf Wurmb, Heidelberg; Peter Freyberg, Speyer; Kurt Wendel, and Wolfgang Schwarz, both of Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sept. 3, 1974, Ser. No. 502,664

Claims priority, application Germany, Sept. 14, 1973, 2346310

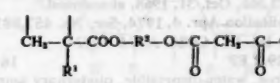
Int. Cl.² C08K *7/14, 9/04*

U.S. Cl. 260—37 N **5 Claims**

1. A glass fiber reinforced polyamide molding material of high impact strength which contains:

a. from 40 to 90% by weight of a polyamide: and

b. from 10 to 60% by weight of glass fibers which have been coated with a film-forming polymer containing from 4 to 50% by weight of units of the formula



(I)

in which R^1 is hydrogen or alkyl of one to five carbon atoms and R^2 is a saturated divalent hydrocarbon radical of two to ten carbon atoms, said coating being from about 0.1 to 10% by weight based on the weight of the coated fibers; with or without

c. a conventional stabilizer, flame retardant, pigment, filler or other additive.

3,962,173

PROCESS FOR THE PREPARATION OF EASILY DISPERSIBLE AND STABLE MOLYBDATE RED AND CHROME YELLOW PIGMENTS

Dieter Wick, deceased, late of Eschborn, Taunus, Germany, and by Anna Elisabeth Wick nee Sommer, heiress, Liederbach, Taunus, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 20, 1975, Ser. No. 542,422

Claims priority, application Germany, Jan. 21, 1974, 2402694

Int. Cl.² C08K *9/04*

U.S. Cl. 260—39 R **10 Claims**

1. In a process for preparing an easily dispersible and color-stable molybdate red or chrome yellow pigment stabilized with silicon dioxide, aluminum oxide and/or antimony trioxide and a longchain aliphatic amine the improvement comprising: precipitating said pigment from an aqueous solution, stabilizing it with silicon dioxide, aluminum oxide and/or antimony trioxide, precipitating on the so-obtained stabilized pigment an aliphatic mono-, di- or triamine of the formula

$$R{-}NH{-}(A{-}NH{-})_x H,$$

in which R is a hydrocarbon group which is saturated or once or twice ethylenically unsaturated and has 10 to 20 carbon atoms, A is alkylene of 2 to 4 carbon atoms and x is 0, 1 or 2, and adding to the so-obtained aqueous pigment suspension an air-drying, water-soluble lacquer binding agent.

3,962,174

POLYALKYLENE TEREPHTHALATE POLYMER MOLDING RESINS

Frank M. Berardinelli, Millington, N.J., assignor to Celanese Corporation, New York, N.Y.

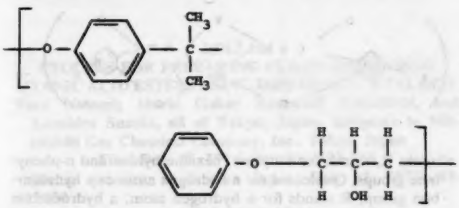
Filed Aug. 12, 1974, Ser. No. 496,607

Int. Cl.² C08L *67/02*

U.S. Cl. 260—40 R **16 Claims**

1. An improved thermoplastic polyester molding resin comprising a polyalkylene terephthalate polymer selected from the group consisting of polybutylene terephthalate polymer

and polypropylene terephthalate polymer, and having an intrinsic viscosity in the range of from 0.2 to about 1.2 deciliters per gram, reinforcing agents intimately mixed with said polymer and from about 0.1 to about 8 weight percent, based on the total thermoplastic polyester molding resin, of a thermoplastic phenoxy resin having a repeating structure



and an average molecular weight range from about 15,000 to about 75,000.

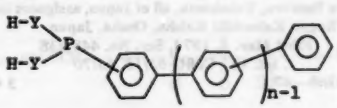
3,962,175

BENZENE PHOSPHONOUS ACID COMPOUNDS, THEIR PRODUCTION AND USE AS STABILIZERS FOR ORGANIC MATERIALS

Kurt Hofer, Muenchenstein, and Guenther Tscheulin, Riehen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 191,079, Oct. 20, 1971, Pat. No. 3,825,629. This application Apr. 25, 1974, Ser. No. 463,867
Claims priority, application Switzerland, Oct. 22, 1970, 15605/70; June 30, 1971, 9597/71
Int. Cl.[2] C08K *5/00*
U.S. Cl. 260—45.7 P **9 Claims**

1. A method of stabilizing material against the effect of light, oxygen or heat which comprises incorporating in or applying to the surface of an organic material which is sensitive to said effect an effective amount of a stabilizing agent of the formula



wherein Y is oxygen or sulphur and
n is 1 or 2,
in free acid or salt form.

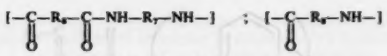
3,962,176

ANTISTATIC POLYAMIDE COMPOSITIONS WHICH ARE STABILIZED AGAINST YELLOWING

Claus-Rudiger Bernert, Dormagen, and Eduard Radlmann, Dormagen-Hackenbroich, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 16, 1974, Ser. No. 470,495
Claims priority, application Germany, May 16, 1973, 2324689
Int. Cl.[2] C08K *5/20, 5/41;* **C08L** *77/00*
U.S. Cl. 260—45.7 R **9 Claims**

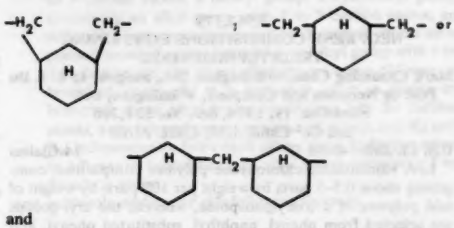
1. Antistatic polyamide compound which has been stabilized against yellowing caused by the action of heat, comprising an aliphatic polyamide having recurrent structural units corresponding to one of the following general formulae:



wherein

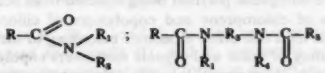
R_6 denotes a straight or branched chain C_4–C_{20} alkylene group,

R_7 denotes a straight or branched chain alkylene group, a cyclohexylene group or



and

R_8 denotes a straight or branched chain C_2–C_{20} alkylene group which contains at least one polyoxyalkylene compound in an amount up to 7%, by weight, and from 0.1 to 7%, by weight, of a carboxylic acid amide corresponding to one of the following general formulae:



wherein

R and R_5 represent the same or different C_6–C_{24} alkyl groups,

R_1 represents a C_6–C_{24} alkyl group,

R_2 represents a C_8–C_{24} alkyl group,

R_3 represents a C_1–C_6 alkylene group, and

R_4 represents hydrogen or a C_1–C_5 alkyl group.

3,962,177

SMOKE RETARDANT VINYL CHLORIDE AND VINYLIDENE CHLORIDE POLYMER COMPOSITIONS

Elmer Douglas Dickens, Jr., Richfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed June 2, 1975, Ser. No. 582,743
Int. Cl.[2] C08J *3/20*
U.S. Cl. 260—45.75 N **20 Claims**

1. A smoke retardant composition comprising a vinyl chloride or vinylidene chloride polymer together with (A) at least one nickel compound selected from the group consisting of $Ni(BO_2)_2$, Ni_2O_3, $Ni_3(PO_4)_2$, nickel citrate, nickel oxalate and tetrakis (triphenyl phosphite) nickel and (B) at least one aluminum compound selected from the group consisting of aluminum metal, γ-Al_2O_3, AlSb, aluminum zinc sulfate, basic aluminum acetate, and sodium aluminum carbonate (dawsonite), said compounds (A) and (B) being present in a total amount from about 0.25 to about 100 weight parts per 100 weight parts of polymer.

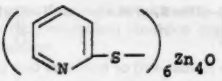
3,962,178

STABILIZED POLYOLEFIN COMPOSITION

Mitsuo Masaki; Satoshi Matsunami; Toshio Yoshikawa, and Nagayoshi Sakamoto, all of Ichihara, Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed July 16, 1975, Ser. No. 596,516
Claims priority, application Japan, Aug. 6, 1974, 49-89465
Int. Cl.[2] C08J *3/20*
U.S. Cl. 260—45.75 W **5 Claims**

1. A stabilized polyolefin composition which comprises 100 weight parts of a polyolefin and 0.001 – 5 weight parts of hexakis(2-pyridylthio)tetrazinc monooxide having the formula



3,962,179

NEOPRENE COMPOSITIONS CONTAINING TRIARYLPHOSPHINES

Mark Chaoming Chen, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 19, 1974, Ser. No. 534,200
Int. Cl.² C08K 5/50; C08L 11/00
U.S. Cl. 260—45.95 G 14 Claims

1. A vulcanizable chloroprene polymer composition comprising about 0.5–5 parts by weight per 100 parts by weight of said polymer of a triarylphosphine, wherein the aryl groups are selected from phenyl, naphthyl, substituted phenyl, and substituted naphthyl;

the substituents being one or more alkyl groups having up to a total of ten carbon atoms per aromatic ring or one or more alkoxy groups having a total of up to five carbon atoms per aromatic ring;

and the chloroprene polymer being selected from homopolymers of chloroprene and copolymers of chloroprene with at least one other monomer belonging to the group consisting of sulfur and organic monomers copolymerizable with chloroprene, wherein chloroprene constitutes at least 50 weight percent of the total organic monomer makeup; said composition also comprising magnesia, zinc oxide, and a vulcanization accelerator, except that the vulcanization accelerator may be absent when the chloroprene polymer is a chloroprene/sulfur copolymer.

3,962,180

PROCESS FOR POLYMERIZING PHENOLS TO PRODUCE POLYPHENYLENE OXIDES OF LOW MOLECULAR WEIGHT

Eiichi Yonemitsu, Kashiwa; Akitoshi Sugio, Omiya, and Akihiko Konishi, Kashiwa, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Oct. 30, 1974, Ser. No. 519,196
Claims priority, application Japan, Nov. 2, 1973, 48-123731
Int. Cl.² C08G 61/10
U.S. Cl. 260—47 ET 9 Claims

1. A process for polymerizing phenols to produce polyphenylene oxides of low molecular weight which comprises oxidative polymerization of phenols with oxygen or a gas containing oxygen in the presence of a catalyst selected from the group consisting of a combination of a copper compound and an amine, a combination of a manganese compound and amines or other basic compounds and a combination of a cobalt compound and an amine, in a solvent of an amount of 1 – 6 times the amount of the phenols and the phenols being added continuously to the reaction medium containing the catalyst.

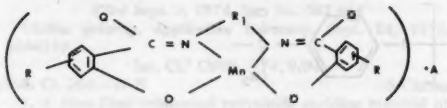
3,962,181

PROCESS FOR PREPARATION OF POLYPHENYLENE OXIDES

Takashi Sakauchi; Akiyoshi Somemiya, and Satoshi Tonoki, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 203,297, Nov. 30, 1971, abandoned.
This application May 13, 1974, Ser. No. 469,188
Claims priority, application Japan, Dec. 1, 1970, 45-106520
Int. Cl.² C08G 61/10
U.S. Cl. 260—47 ET 12 Claims

1. A process for preparing polypheylene polyphenylene oxides comprising the steps of oxidizing and condensing a phenol selected from the group consisting of O-cresol; 2,6-dimethylphenol; 2,6-diethylphenol; 2,6-dimethoxyphenol; 2,6-dipropenylphenol; 2,6-diphenylphenol; 2,4,6-trimethylphenol; 3-methoxyphenol and mixtures thereof; in the presence of a basic chelate compound expressed by the formula:



wherein R_1 stands for ethylene, hexamethylene and o-phenylene groups, Q selected for a hydrogen atom or a hydrocarbon group, R stands for a hydrogen atom, a hydrocarbon group, a hydrocarbon-oxy group, a halogen atom, an amino group, a nitro group, a hydroxyl group, and A stands for ethylene diamine, and in the presence of an organic solvent.

3,962,182

IMIDE OXIRANE REACTIONS

Roger B. Steele, Fair Oaks; Arthur Katzakian, Jr.; Joseph J. Scigliano, both of Sacramento, and Edward E. Hamel, Placer County, all of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Division of Ser. No. 308,611, Nov. 21, 1972, Pat. No. 3,838,101. This application July 12, 1974, Ser. No. 487,956
Int. Cl.² C08G 30/14
U.S. Cl. 260—47 EN 12 Claims

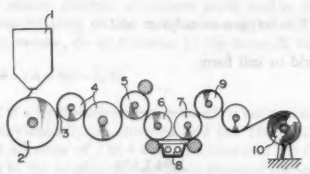
1. A method of catalyzing the reaction of primary cyclic imides with an oxirane oxygen compound which comprises carrying out the reaction in the presence of an effective catalytic amount of an active chromium III tricarboxylate having available coordination sites, at from about 0°C to 200°C.

3,962,183

POLYETHYLENE-1,2-DIPHENOXYETHANE-4,4'-DICARBOXYLATE UNIAXIALLY STRETCHED FILMS OF GOOD DIMENSIONAL STABILITY AND ANTI-FIBRILLATION

Mitsuo Kohno; Tsuneo Igarashi, both of Moriyama, and Minoru Nomura, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 5, 1974, Ser. No. 448,238
Int. Cl.² C08G 63/18, 63/70
U.S. Cl. 260—47 C 3 Claims



1. Uniaxially stretched film consisting essentially of polyethylene 1,2-diphenoxyethane-4,4'-dicarboxylate unit and having a density in the range of 1.345 to 1.360, a Young's modulus of 800–1500 Kg/mm² in the stretching direction, a tensile strength at 5% elongation of 15–40 Kg/mm² in the same direction, a strength at break of 25–70 Kg/cm² in the same direction, a tensile strength at 5% elongation of 5–10 kg/mm² in the direction perpendicular to the stretching direction, a strength at break of 7–15 Kg/mm² in the direction perpendicular to the stretching direction, an Elmendorf's tear strength of 8–20 kG/mm² in the stretching direction, an elongation at break of 50–150% in the direction perpendicular to the stretching

direction and a shrinkage of 0–4% in any direction at the time when heated at 150°C for 2 hours.

3,962,184

PROCESS FOR PREPARING CURED RESIN FROM CYANIC ACID ESTERS USING IMIDAZOLE CATALYSTS

Toru Notomi; Morio Gaku; Kazuyuki Nakamichi, and Kazuhiro Suzuki, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

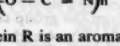
Filed Dec. 18, 1974, Ser. No. 533,746

Claims priority, application Japan, Dec. 21, 1973, 48-143100

Int. Cl.[2] C08G *18/00*

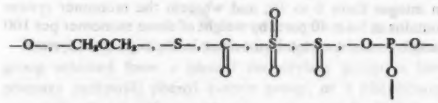
U.S. Cl. 260—47 CP 4 Claims

1. In the process for preparing a cured resin which comprises curing a resin precursor in the presence of a catalyst, wherein said resin precursor is at least one member selected from the group consisting of cyanic acid esters of the following formula

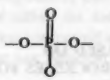


wherein R is an aromatic nucleus-containing residue which is selected from the group consisting of a residue derived from an aromatic hydrocarbon selected from the group consisting of benzene, biphenyl and naphthalene, a residue derived from a compound in which at least two benzene rings are bonded to each other by a bridging member selected from the group consisting of

wherein R_8 and R_9 are the same or different and each represents a hydrogen atom or an alkyl group containing 1 to 4 carbon atoms,

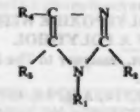


and



and a residue resulting from the removal of a phenolic hydroxyl group from a novolac-type or resol-type phenolic resin skeleton; said aromatic nucleus is optionally substituted by a substituent selected from the group consisting of alkyl groups containing 1 to 4 carbon atoms, alkoxy groups containing 1 to 4 carbon atoms, chlorine and bromine; *n;* is an integer of 2 to 5; and the cyanate group is always directly bonded to the aromatic nucleus,

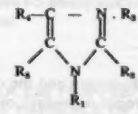
and prepolymers of the said cyanic acid esters which have a triazine ring and an average molecular weight of 400 to 6,000, and are formed by trimerizing the cyanate group of the cyanic acid esters, the improvement which is characterized in that as said curing catalyst is used at least one compound selected from the group consisting of imidazoles of the following formula (I)



(I)

wherein R_1 is a hydrogen atom, an alkyl group containing 1 to 5 carbon atoms, a benzyl group, a cyanoalkyl group containing an alkyl group with 1 to 5 carbon atoms, an aminoalkyl group containing 1 to 5 carbon atoms or a guanaminoalkyl group containing an alkyl group with 1 to 2 carbon atoms, the above alkyl groups being of linear or branched chain; R_2 is a hydrogen atom, a linear or branched chain alkyl group containing 1 to 20 carbon atoms, a cyclohexyl group or a phenyl group; and R_4 and R_5, independently from each other, are a hydrogen atom or a linear or branched chain alkyl group containing 1 to 5 carbon atoms,

and imidazole adducts of the following formula



(II)

wherein R_1, R_2 R_4 and R_5 are the same as defined with regard to formula (I), and R_3 represents an aromatic polycarboxylic acid which forms an adduct by addition to the imidazole.

3,962,185

POLYESTER COMPOSITIONS HAVING A DURABLE ANTISTATIC PROPERTY

Kazuya Chimura; Hiroshi Iwata, both of Ohtake; Kazunori Kagawa, Hiroshima, and Kazuhiko Ishida, Ohtake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

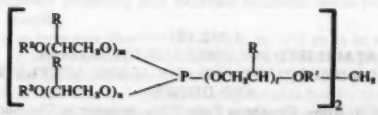
Continuation-in-part of Ser. No. 277,573, Aug. 3, 1972, abandoned. This application Aug. 7, 1974, Ser. No. 495,361

Claims priority, application Japan, Dec. 22, 1971, 46-104316

Int. Cl.[2] C08G *63/18, 63/46, 63/70*

U.S. Cl. 260—47 C 7 Claims

1. A durably antistatic polyester composition comprising (*a*) a polyester wherein at least 80 mole % of the component units is ethylene terephthalate and, in amounts of 0.1 – 10% by weight of the polyester, (*b*) a compound having the general formula:



wherein R is selected from the group consisting of a hydrogen atom and a methyl group; R′ is a member selected from the group consisting of unsubstituted phenylene and phenylene substituted with one or more hydrocarbon radicals; R^1 and R^2 are each selected from the group consisting of C_1 to C_{18} alkyl, unsubstituted phenyl, and substituted phenyl containing one or more hydrocarbon radical substituents; and *l*, *m* and *n* are each an integer of from 1 to 200.

3,962,186

CURABLE COMPOSITION OF A POLYEPOXIDE WITH A METHYLOL DERIVATIVE OF A POLYTHIOL

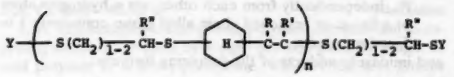
Richard A. Hickner, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 388,714, Aug. 16, 1973, abandoned. This application Feb. 7, 1975, Ser. No. 548,116

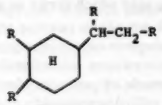
Int. Cl.[2] C08G *30/10*

U.S. Cl. 260—47 EC 6 Claims

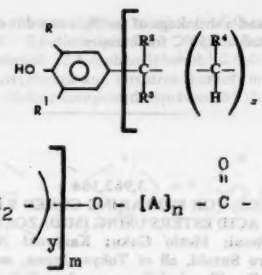
1. A curable composition comprising a 1,2-polyepoxide in admixture with a methylol derivative of a polythiol having the formula:



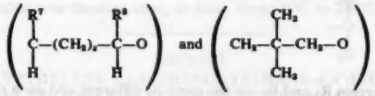
wherein *n* is 1–3, one of R and R′ is hydrogen and the other is hydrogen or methyl, and R″ is hydrogen or methyl; or said derivative having the formula



wherein each R is —Cl, —Br, —SR_1SY or —OR_2SR_1SY provided that at least two of said R groups independently are of said —SR_1SY or —OR_2SR_1SY; R_1 is an alkylene group having 2 to 10 carbon atoms or an alkylene group having 2 to 10 carbon atoms having one or more —O— or —S— ether groups and R_2 is an alkylene group of 2 to 4 carbon atoms; and wherein at least one Y is —CH_2OH.



wherein R and R^1 are tertiary alkyl radicals having from 4 to 8 carbon atoms, wherein R^2 and R^3 are selected from the group consisting of hydrogen, alkyl radicals having from 1 to 12 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms, aralkyl radicals having from 7 to 13 carbon atoms and aryl radicals having from 6 to 12 carbon atoms, wherein R^4 is selected from the group consisting of alkyl radicals having from 1 to 12 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms and aralkyl radicals having from 7 to 13 carbon atoms, wherein R^5 is selected from the group consisting of hydrogen; alkyl radicals having from 1 to 4 carbon atoms, carboxymethyl radical and carbalkoxymethyl radicals and wherein R^6 is selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms, phenyl and substituted phenyl radicals having located in the para position a radical selected from the group consisting of alkyl radicals having 1 to 4 carbon atoms and alkoxy radicals having 1 or 2 carbon atoms, carboxyl radical and carbalkoxy radicals, wherein *x* is an integer from 0 to 4, *y* is an integer from 0 to 11-x, wherein *m* is 0 or 1, *n* is an integer from 1 to 3, wherein A is selected from the group consisting of



wherein R^7 and R^8 are selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms and aryl radicals having from 6 to 12 carbon atoms, wherein *z* is an integer from 0 to 10, and wherein the monomer system contains at least 40 parts by weight of diene monomer per 100 parts by weight of total monomer in the monomer system.

3,962,187

STABILIZED POLYMERS OF DITERTIARY ALKYL-4-HYDROXYBENZYLOXY ALKYL ACRYLATES AND DIENES

Richard H. Kline, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 20, 1970, Ser. No. 56,677

Int. Cl.[2] C08D *1/24, 3/06;* C08F *15/02*

U.S. Cl. 260—62 23 Claims

1. A process of preparing an age resistant polymeric composition comprising polymerizing in an emulsion free radical polymerization system, a monomer system containing at least one phenolic monomer having the following-structural formula:

3,962,188

LINEAR POLYESTERS BASED ON PHENYLISOCYANURATE AND PROCESSES FOR PREPARING SAME

William J. Kauffman, Lititz, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 31, 1974, Ser. No. 537,710

The portion of the term of this patent subsequent to June 8, 1993, has been disclaimed.

Int. Cl.[2] C08G *63/68*

U.S. Cl. 260—75 N 3 Claims

1. A process for preparing a novel polyester comprising reacting a salt of phenylisocyanuric acid with ethyl-4-chlorobutyrate in an inert reaction medium at a temperature of about 25°C. to 150°C. to form the intermediate 1,3-bis(3-carbethoxypropyl)-5-phenylisocyanurate, hydrolyzing said intermediate in the presence of an acid to yield 1,3-bis(3-carboxypropyl)-5-phenylisocyanurate, and condensing 1,3-bis(3-carboxypropyl)-5-phenylisocyanurate with a diol of two to ten carbon atoms.

3,962,189

PROCESS AND CATALYST-INHIBITOR SYSTEMS FOR PREPARING SYNTHETIC LINEAR POLYESTERS

Nicholas C. Russin; Ronald A. Tershansy, and Charles J. Kibler, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 519,953, Nov. 1, 1974, abandoned. This application May 12, 1975, Ser. No. 576,415
Int. Cl.² C08G 63/14
U.S. Cl. 260—75 R 22 Claims

1. Process for producing polyethylene terephthalate comprising reacting dimethyl terephthalate and ethylene glycol at a temperature sufficient to effect ester interchange and in the presence of a catalyst system comprising a mixture of salts of manganese and cobalt with a titanium alkoxide and organic salt of an alkali metal or alkaline earth metal, the manganese salts being present in the amount of about 20–110 ppm Mn, the cobalt salts being present in the amount of about 5-35 ppm Co, the titanium alkoxide being present in the amount of about 20–60 ppm Ti, and the organic salt of an alkali metal or alkaline earth metal being present in the amount of about 7–35 ppm metal, all parts by weight based on the acid fraction of the polyester.

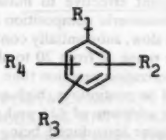
3,962,190

CHAIN COUPLERS FOR POLYESTERIFICATION AND NOVEL POLYESTERS

Robert L. Wear, West St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 7, 1974, Ser. No. 449,012
Int. Cl.² C08G 63/20
U.S. Cl. 260—75 R 11 Claims

1. In the process comprising forming a polyester by reacting at least one diol with at least one dicarboxylic compound the improvement which comprises adding to a reaction mixture of diol and dicarboxylic compound after polyesterification has begun, a chain coupling compound of the formula:



wherein R_1, R_2, R_3 and R_4 are hydrogen or a carboxylate group selected from a phenyl carboxylate group, a bis(-phenoxy carbonyl) phenyl ketone group, or a bis(phenoxy carbonyl) phenyl sulfone with at least three of R_1–R_4 being a phenyl carboxylate or a bis(phenoxy carbonyl) phenyl ketone or a bis(phenoxy carbonyl) phenyl sulfone group with at most one of either the ketone or the sulfone group in the chain coupling compound and each said carboxylate group having at most one adjacent carboxylate group.

3,962,191

LINEAR ISOCYANURATE POLYESTERS AND PROCESSES FOR PREPARING SAME

William J. Kauffman, Lititz, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 31, 1974, Ser. No. 537,686
Int. Cl.² C08G 63/68
U.S. Cl. 260—75 N 3 Claims

1. A process for preparing a novel polyester which comprises reacting phenylisocyanuric acid with acrylonitrile in the presence of N-benzyltrimethyl ammonium hydroxide; 40% in methanol, in an inert reaction medium at a temperature of about 75°C. to 150°C. to form the intermediate 1,3-bis(2-cyanoethyl)-5-phenylisocyanurate, hydrolyzing said intermediate in the presence of an acid to yield 1,3-bis(2-carboxyethyl)-5-phenylisocyanurate, and condensing 1,3-bis(2-carboxyethyl)-5-phenylisocyanurate with a diol of two to ten carbon atoms.

3,962,192

LINEAR POLYESTERS CONTAINING ISOCYANURATE RINGS AND PROCESSES FOR PREPARING SAME

William J. Kauffman, Lititz, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 31, 1974, Ser. No. 537,688
The portion of the term of this patent subsequent to June 8, 1993, has been disclaimed.
Int. Cl.² C08G 63/68
U.S. Cl. 260—75 N 3 Claims

1. A proces for preparing a novel polyester comprising reacting a salt of phenylisocyanuric acid with ethyl-chloroacetate in an inert reaction medium at a temperature of about 25° to 150°C. to form the intermediate 1,3-bis(carbethoxymethylene)-5-phenylisocyanurate, hydrolyzing said intermediate in the presence of an acid to yield 1,3-bis(carboxymethylene)-5-phenylisocyanurate, and condensing 1,3-bis (carboxymethylene)-5-phenylisocyanurate with a diol of 2 to 10 carbon atoms.

3,962,193

PROCESS FOR PREPARING LINEAR POLYESTERS IN THE PRESENCE OF METALLIC AMINO COMPOUNDS

Yuzi Okuzumi, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 696,095, Jan. 8, 1968, abandoned. This application Dec. 27, 1971, Ser. No. 212,716
Int. Cl.² C08G 63/34
U.S. Cl. 260—75 R 2 Claims

1. In the process of preparing glycol esters of dicarboxylic acids by ester interchange reaction of an ester of said acid selected from the group consisting of methyl, ethyl, propyl, butyl and phenyl esters with a glycol followed by condensation with the elimination of glycol to form a high molecular weight polyester resin the improvement which comprises carrying out said ester interchange reaction in the presence of a catalytic amount of diisopropyl amino lithium.

3,962,194

POLYESTERS CONTAINING STRUCTURAL UNITS DERIVED FROM PHOSPHONIC ACIDS OR ESTERE

Ulrich Bollert, Hofheim, Taunus; Hans-Jerg Kleiner, Bad Soden, Taunus, and Walter Herwig, Neuenhain, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 380,744, July 19, 1973, abandoned. This application Feb. 10, 1975, Ser. No. 548,828
Claims priority, application Germany, July 22, 1972, 2236037
Int. Cl.² C08G 63/16, 63/18, 63/66, 63/68
U.S. Cl. 260—75 P 4 Claims

1. A filament or fiber manufactured by spinning a snythetic linear modified polyester, drawing and after-treating, which comprises preparing said modified synthetic linear polyester by reacting

a. at least one dicarboxylic acid as an acid or as an ester of a low molecular weight alcohol, said acid being suitable for the manufacture of a fiber-forming linear polyester
b. at least one diol, said diol being suitable for the manufacture of a fiber-forming linear polyester said acid and diol being reacted by esterification or transesterification and polycondensation, while said acid and diol being reacted, adding prior to, during or shortly before termination of the polycondensation,
c. about 5 to 15 mol percent based on the acid component, of a bifunctional alkylene-, arylene-, or aralkylene-diphosphinic acid, which may contain further hetero- and halogen atoms, and/or an ester of said diphosphonic acid of a low molecular weight alcohol or of a diol forming the

diol component of said polyester, oligomer of said diphosphinic acid diol esters, or mixtures of oligomers of said diphosphinic acid diol esters with monomers of said ester of said diphosphinic acid, said bifunctional alkylene-, arylene, or aralkylene- diphosphinic acid, including said hetero- and halogen atoms, having the formula:

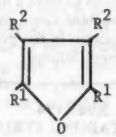
in which R represents a saturated open chain or cyclic alkylene, arylene or aralkylene radical, and where R may also have at least one hetero atom and/or at least one halogen atom selected from the group consisting of F, Cl, Br; R_1 and R_2 are identical or different and each represents an alkyl group having up to 6 C-atoms, an aryl group or an aralkyl group, which may contain at least one hetero atom and/or at least one halogen atom selected from the group consisting of F, Cl, and Br.

3,962,195
TERPOLYMERS OF A FURAN, A MALEIC ANHYDRIDE AND ONE OF A CONJUGATED DIENE AND A VINYL AROMATIC COMPOUND

George A. Moczygemba, and Henry L. Hsieh, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 11, 1973, Ser. No. 369,062
Int. Cl.² C08F 222/06, 222/08, 224/00
U.S. Cl. 526—11.1 11 Claims

1. A process for producing a novel terpolymer which comprises interreacting in the presence of a free-radical initiator: (1) a furan having the formula:



wherein R^1 is hydrogen, halogen, or a lower alkyl group such as methyl or ethyl and R^2 is hydrogen, halogen, or hydrocarbyl such as alkyl, cycloalkyl, aryl, or combinations thereof such as alkaryl, aralkyl and the like such that the total number of carbon atoms in all of the R groups does not exceed about 20; (2) a maleic anhydride and (3) at least one unsaturated compound selected from a conjugated diene and a vinyl aromatic, said interreacting under conditions suitable for terpolymerization comprising a pressure sufficient to maintain the reaction mixture substantially in the liquid phase and a ratio of said furan:maleic anhydride:unsaturated compound in the range of about 10 to 0.1:1:10 to 0.1.

3,962,196
TECHNIQUE FOR REDUCING POLYMER DEPOSIT DURING POLYMERIZATION IN AQUEOUS DISPERSION

Dean R. Weimer, and Albert M. Durr, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 29, 1974, Ser. No. 518,425
Int. Cl.² C08F 2/20, 14/06
U.S. Cl. 526—74 6 Claims

1. A method for inhibiting polymer build-up on the interior surfaces of a polymerization vessel during the polymerization of substantially water-insoluble monoethylenically unsaturated liquid monomer in aqueous dispersion comprising adding a polymer build-up inhibiting amount of a heterocyclic compound to the aqueous dispersion prior to polymerization, said heterocyclic compound being benzotriazole, tolyltriazole, 2(2′-hydroxy-5′-methylphenyl) benzotriazole, or mixtures thereof.

3,962,197
SUSPENSION POLYMERIZATION PROCESS

Ravi Khanna, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 380,318, July 18, 1973, abandoned. This application Jan. 2, 1975, Ser. No. 538,069
Int. Cl.² C08F 2/18, 2/20
U.S. Cl. 526—79 8 Claims

1. A high temperature, non-continuous, suspension polymerization process wherein a monomeric composition comprising at least about 40% by weight of an aryl monomer having a polymerizable ethylenically unsaturated organo substituent is polymerized into finely divided polymer particles in a liquid suspension media free from natural gums and polyacrylamide, the resultant polymer comprising said particles having the following properties: a low molecular weight equal to a styrene-containing polymer having an inherent viscosity within the range of from about 0.2 to about 0.6, insolubility in the liquid suspension media, and a glass transition temperature lower than the temperature maintained in said suspension media during polymerization, said process comprising the sequential steps of:

a. forming a heated liquid suspension media comprising water and a water-soluble suspending agent, said agent being present in said media in an amount less than about 3 percent by weight based on the total weight of said monomeric composition, said media being heated to a temperature above the glass transition temperature of said polymer particles;

b. substantially simultaneously introducing into said heated media (1) said monomeric composition and (2) a polymerization initiator soluble in the monomeric composition in an amount effective to initiate polymerization thereof, said monomeric composition and initiator being introduced at a slow, substantially continuous rate over a time within the range of from 20 to about 85 percent of the total polymerization reaction time, said heated media being subjected to continuous, high-rate shearing action throughout the addition of (1) and (2), and the total amount of initiator introduced being less than about 5 weight percent based on the total weight of said monomeric composition;

c. maintaining, until polymerization is substantially complete, said high-rate shearing action and said media at a temperature above the glass transition temperature of said polymer particles and

d. cooling said media below the glass transition temperature of said polymer particles while maintaining said high-rate shearing action to obtain finely-divided polymeric particles suspended in the liquid suspension media.

3,962,198
HOT-MELT COMPOSITION

Akira Wada, Kamakura, and Yorimitsu Shibata, Yokohama, both of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1975, Ser. No. 564,211
Claims priority, application Japan, Apr. 8, 1974, 49-39609
Int. Cl.² C08L 9/02, 23/04
U.S. Cl. 260—889 6 Claims

1. A hot-melt composition comprising

[A] a cyclopentadiene resin having a bromine number of not more than 70 and a softening point of 50° to 170°C., said resin being the polymerization reaction product of 90 to 40% by weight of (I) a monomer containing a cyclopentadiene skeleton with 10 to 60% by weight of (II) at least one polar unsaturated monomer selected from the group consisting of

(i) organic unsaturated cyano compounds containing 3 to 6 carbon atoms, (ii) alkenyl alkanoates derived from aliphatic monocarboxylic acids containing 1 to 4 carbon atoms and vinyl alcohol or allyl alcohol, and (iii) unsaturated carboxylic acid esters derived from unsaturated carboxylic acids containing 3 to 4 carbon atoms and aliphatic alcohols containing 1 to 6 carbon atoms, and

[B] a copolymer containing ethylene.

3,962,199

PROCESS FOR REMOVING VANADIUM CATALYST RESIDUES FROM POLYMER SOLUTIONS

Joel David Citron, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 28, 1975, Ser. No. 554,224

Int. Cl.² C08F 6/08

U.S. Cl. 528—485 **19 Claims**

1. A process for removing dissolved vanadium residues from a solution of a hydrocarbon α-olefin polymer consisting of homopolymers of α-olefins and copolymers of α-olefins with monomers selected from other α-olefins and nonconjugated dienes, said process comprising contacting in the absence of oxygen said solution with one or more active metals selected from the group of lithium, sodium, potassium, rubidium, cesium, zinc, and aluminum at a temperature of about 50°–225°C. and separating the solution from insoluble vanadium residues precipitated thereby;

with the proviso that the solvent in which the α-olefin polymer and the vanadium residues are dissolved is inert to the active metal at the operating temperature and pressure, and that the solution is liquid.

3,962,200

BULK POLYMERIZATION USING AN ORGANOSILOXANE ANTI-FOAM COMPOUND

Yves de Zarauz, Gergovie-le-Cendre, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Cedex, France

Filed Jan. 31, 1975, Ser. No. 546,136

Claims priority, application France, Feb. 5, 1974, 74.03892

Int. Cl.² C08F 236/04, 279/00, 4/00

U.S. Cl. 526—78 **11 Claims**

1. In the process for the homo- or co-polymerization of diene monomers with each other or with vinyl aromatic compounds by means of a coordination catalyst system comprising combinations of complexes having a base of transition metals as initiators, in the absence of solvent and using the heat of evaporation of the monomer or monomers to control the temperature of the reaction medium, the improvement which comprises adding to the reaction medium, at the latest at the time of the formation of the foam, a proportion of 0.01 to 30 per thousand, by weight of the monomer, of one or more anti-foam compounds selected from the group of the organosiloxanes containing in their main chain at least one recurrent unit of the general formula

R, R′ being alkyl, aralkyl, aryl, haloalkyl, haloaryl or polyhaloalkyl radicals, and *n* being a whole number.

3,962,201

PROCESS FOR POLYMERIZING ACRYLICS EMPLOYING (HYDROCARBON-PEROXY HYDROCARBON) PHOSPHONATES

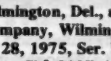
Lothar G. Dulog, St. Martens-Latem, and Willy P. Broeckx, Reet, both of Belgium, assignors to S. A. Texaco Belgium N.V., Brussels, Belgium

Division of Ser. No. 415,025, Nov. 12, 1973, which is a division of Ser. No. 291,898, Sept. 25, 1972. This application Nov. 21, 1974, Ser. No. 526,018

Int. Cl.² C08F 220/42, 220/70, 120/42, 120/70

U.S. Cl. 526—193 **7 Claims**

1. The process for polymerizing an acrylic selected from the group consisting of acrylonitrile, and esters of acrylic acid and methacrylic acid which comprises initiating said polymerization reaction in the presence of



wherein R is a hydrocarbon containing less than about 18 carbon atoms and it may be inertly substituted, R″ is divalent hydrocarbon containing 2–10 carbon atoms and R″ may be inertly substituted, and X is —OR or NR_2 thereby forming polymer; and recovering said polymer.

3,962,202

PROCESS FOR POLYMERIZING OLEFINIC MONOMERS WHICH SUBSTANTIALLY ELIMINATES POLYMER BUILDUP

Marion G. Morningstar, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 27, 1973, Ser. No. 391,879

The portion of the term of this patent subsequent to Nov. 19, 1991, has been disclaimed.

Int. Cl.² C08F 1/11, 1/82, 3/30

U.S. Cl. 526—74 **8 Claims**

1. In a process for the polymerization of monomers selected from vinyl halides, vinylidene halides, vinylidene monomers having at least one terminal $CH_2{=}C<$ grouping, and mixtures thereof which comprises polymerizing the monomer or monomers in an aqueous polymerization medium which contains a water-soluble divalent tin salt of an inorganic acid as a water-phase polymerization inhibitor and keeping said polymerization medium in constant contact with a surface coated with a composition comprised predominantly of an insolubilized polyethyleneimine polymer throughout the polymerization reaction, whereby due to the synergistic effect of said polyethyleneimine and said inhibitor, polymer build-up on said surface is substantially eliminated.

3,962,203

DECHLORINATION OF HIGH YIELD POLYOLEFINS USING NEUTRAL PHOSPHORYL ESTERS

Nicholas M. Karayannis; Habet M. Kheghatian, both of Naperville, and John S. Skryantz, Aurora, all of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Dec. 19, 1974, Ser. No. 534,189

Int. Cl.² C08F 6/00, 6/28

U.S. Cl. 528—486 **14 Claims**

1. A process comprising the steps of:

a. admixing polyolefin containing a metal chloride catalyst residue, which polyolefin is made using at least one 1-alkene containing between two and eight carbon atoms by a bulk phase or vapor phase polymerization process, with an effective amount of at least one compound selected from the group consisting essentially of (RO)R′R′ ′PO and (RO)(R′O)R″PO wherein R, R′ and R″ are the same or different, at least one RO group is a methoxy group, and the remaining R, R′ and R″ are one to about six carbon atom alkyl, alkaryl or aryl radicals; and

b. treating the result of step (a) such that said polyolefin and said compound react to produce a polymeric product substantially free of said metal chloride catalyst residue.

3,962,204

METHOD FOR THE PREPARATION OF POLYOLEFINS

Kazuo Matsuura, Kawasaki; Nobuyuki Kuroda; Toru Nakamura, both of Yokohama, and Mituji Miyoshi, Kanagawa, all of Japan, assignors to Nippon Oil Company Ltd., Tokyo, Japan

Filed May 16, 1974, Ser. No. 470,514
Claims priority, application Japan, May 21, 1973, 48-55526
Int. Cl.² C08F 4/64, 10/02
U.S. Cl. 526—89 5 Claims

1. Method for the preparation of polyolefins by polymerizing or copolymerizing an olefin or olefins in the presence of a catalyst composed of a halogenide of a titanium compound and/or vanadium compound supported on a solid carrier and an organometallic compound of a metal of Groups I–IV of the Periodic Table, said solid carrier comprising a reaction product obtained by reacting (1) an aluminum compound represented by the general formula $Al(OOCR)\ (OR')_2$ wherein R and R′ being the same or different each represent alkyl, aryl or aralkyl and (2) a magnesium compound represented by the general formula $(Mg(OR'')_2$ wherein R″ being the same as or different from R and/or R′ is alkyl, aryl or aralkyl at a molar ratio of (1):(2) of substantially at least 2:1 at a temperature in the range from 50° to 500°C for 1 to 30 hours in the presence of an inert solvent.

3,962,205

POLYMER MATERIALS

Ian MacMillan Ward, Bramhope, near Leeds, and Giancarlo Capaccio, Leeds, both of England, assignors to National Research Development Corporation, London, England

Filed Mar. 6, 1974, Ser. No. 448,630
Claims priority, application United Kingdom, Mar. 6, 1973, 10746/73; Oct. 3, 1973, 46141/73
Int. Cl.² C08F 10/02
U.S. Cl. 526—352 9 Claims

1. An oriented high density polyethylene polymer material having a density of from 0.85 to 1.0 gms/cm³, a weight average molecular weight of less than 200,000, a number average molecular weight of less than 20,000, a ratio of weight average molecular weight $\overline{M}_w$ to number average molecular weight $\overline{M}_n$ such that for $\overline{M}_n > 10^4$, $\overline{M}_w/\overline{M}_n < 8$ and for $\overline{M}_n < 10^4$, $\overline{M}_w/\overline{M}_n < 20$, and a Young's modulus as hereinbefore defined greater than $3 \times 10^{10} N/m^2$.

3,962,206

GEL CHROMATOGRAPHY PROCESS FOR FRACTIONATING IONIC POLYMERS

George B. Butler, Gainesville, Fla., assignor to The Board of Regents of the State of Florida, Fla.

Filed July 19, 1974, Ser. No. 489,889
Int. Cl.² C08F 6/04
U.S. Cl. 260—96 R 20 Claims

1. In a gel chromatographic method of fractionating the diverse molecular weight fractions of a polymer system containing ionic functional groups comprising passing a polar solvent solution of said polymer system through a gel chromatography bed of ionic polymer insoluble in but swellable by said polar solvent, the improvement comprising employing as said ionic gel polymer one containing ionic functional groups having the same charge as those in said polymer system.

3,962,207

METHOD OF PRODUCING α-L-ASPARTYL-L-PHENYLALANINE LOWER ALKYL ESTERS

Noboru Uchiyama, Yokkaichi; Masanori Nagao, Kawasaki, and Naomasa Mizoguchi, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 20, 1974, Ser. No. 534,706
Claims priority, application Japan, July 23, 1974, 49-84351
Int. Cl.² C07C 103/52; A23L 1/22
U.S. Cl. 260—112.5 R 8 Claims

1. A method of producing an α-L-aspartyl-L-phenylalanine alkyl ester which comprises reacting the hydrochloride or hydrobromide of L-aspartic anhydride with an alkyl ester of L-phenylalanine in a liquid medium essentially consisting of an alkanol, a strong acid, and a diluent substantially inert to said hydrochloride or hydrobromide, said ester of L-phenylalanine, said alkanol, and said strong acid during said reacting,

1. said strong acid being sulfuric acid, hydrogen chloride, or a monoalkyl ester of sulfuric acid in an amount of 0.05 to 0.5 mole per mole of said ester of L-phenylalanine,
2. the mole ratio of said hydrochloride or hydrobromide to said ester of phenylalanine being between 1:1 and 1:10,
3. the amount of said alkanol being 2 to 20 percent of the volume of said diluent,
4. said alkyl, said alkanol, and said monoalkyl having not more than four carbon atoms.

3,962,208

NOVEL FLAME RETARDANTS AND THEIR PRODUCTION BY CHLOROBROMINATION OF WOOD PULP WASTE LIQUORS

Esther Zeigerson, Omer, and Moshe Rudolf Bloch, Beer-Sheba, both of Israel, assignors to The State of Israel, Ministry of Commerce & Industry, Jerusalem, Israel

Filed Feb. 10, 1975, Ser. No. 548,797
Int. Cl.² C07G 1/00
U.S. Cl. 260—124 R 18 Claims

1. In a process for the production of a brominated lignin, the improvement which comprises chlorinating a kraft lignin liquor, a lignin sulfonate liquor, or a mixture thereof, with chlorine prior to brominating the lignin, and then both brominating and chlorinating the lignin in the chlorinated liquor in such proportion to produce a halogenated lignin having a total halogen content of from about 18% to about 40% by weight, in a Br:Cl weight ratio of from about 1:1 to about 5:1, and thereafter separating the chloro-brominated lignin which precipitates from the liquor.

3,962,209

PROCESS FOR PREPARING AZO DYESTUFFS WITH ORTHO-AZO CYANO GROUPS BY CYANO EXCHANGE OF METAL CYANIDES AND HALO DYESTUFFS

Alois Gotteschlich, and Klaus Leverenz, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 28,247, April 17, 1970, abandoned, which is a continuation of Ser. No. 615,898, Feb. 14, 1967, abandoned. This application May 18, 1973, Ser. No. 361,603
Claims priority, application Germany, Feb. 17, 1966, 48454; Jan. 12, 1967, 51232
Int. Cl.² C09B 43/00; D06P 1/18, 3/26, 3/54
U.S. Cl. 260—152 9 Claims

1. Process for the production of azo dyestuffs containing at least one cyano group in the diazo component ortho to the azo group, which comprises reacting at a temperature from about room temperature to less than 100°C an azo dyestuff of the formula X—A—N=N—K wherein A stands for an aromatic carbocyclic radical linked to the azo group by a nuclear carbon atom, X stands for Cl or Br linked by a nuclear carbon atom to A in the ortho position to the azo group, and K stands for the radical of a coupling component linked by a nuclear

carbon atom to the azo group, with a metal cyanide in a polar aprotic organic solvent with the exchange of the substituent X for cyano wherein the metal cyanide is copper (I) cyanide or copper (I) cyanide formed in situ by the reaction of alkali metal cyanide with a suitable copper (II) salt.

3,962,210
TERTIARY ALIPHATIC ALPHA-(SULFO)-AZO COMPOUNDS

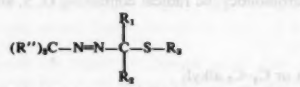
Ronald Edward MacLeay, Williamsville, and Chester Stephen Sheppard, Tonawanda, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 88,250, Nov. 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 725,180, April 29, 1968, abandoned, which is a continuation-in-part of Ser. No. 616,158, Feb. 15, 1967, abandoned. This application Mar. 21, 1974, Ser. No. 453,456

Int. Cl.² C07C *107/02*

U.S. Cl. 260—192 **10 Claims**

1. A tertiary-aliphatic α-(sulfo)azo compound of the formula



(I),

where:

$(R'')_3$ C is C_4–C_{30} t-alkyl, cycloalkyl, alkylcycloalkyl or aralkyl where each R'' is separately selected from C_1–C_8 alkyl, C_7–C_{12} aralkyl or C_6–C_{14} aryl, not more than one R'' being aromatic, or 2 or 3 of said R''s join with the tertiary carbon atom to form C_5–C_{12} cyclo-, bicyclo- or tricycloalkyl;

R_1 and R_2 separately selected from C_1–C_{10} alkyl, C_5–C_{12} cyclo-, bicyclo- or tricycloalkyl and, C_7–C_{12} aralkyl, R_1 can also be C_6–C_{14} aryl, R_1 and R_2 taken together form C_3–C_{11} alkylene, or one or more of each of R_1 and R_2 is substituted with lower alkoxy, hydroxy, carboxy, lower alkoxycarbonyl, lower alkylcarbonyloxy, phenylcarbonyloxy, halogen, cyano, amido or lower alkylsulfonato; and

R_3 is selected from (*a*) C_1–C_{20} alkyl or cycloalkyl which are unsubstituted or subtituted with radicals selected from hydroxy, amino, carboxy, lower alkylcarbonyloxy, phenylcarbonyloxy, lower alkylcarbonyl, lower alkoxycarbonyl, phenoxycarbonyl, halogen, amido, phenyl, lower alkoxy, phenoxy, lower alkylthio, phenylthio, lower alkylphenylthio, cyano and carbonato; (*b*) substituted or unsubstituted C_6–C_{14} aryl; and (*c*) —C(=O)R_4, —C(=S)OR_4 or —C(=S)SR_4 where R_4 is C_1–C_{12} alkyl or cycloalkyl, or C_6–C_{14} aryl or substituted aryl, the substituents in (*b*), and (*c*) being selected from the radicals in (*a*) and C_1–C_6 alkyl.

3,962,211
7-SUBSTITUTED NUCLEOSIDE COMPOUNDS

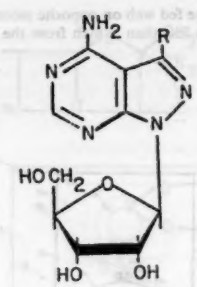
Leroy B. Townsend, and Robert A. Earl, both of Salt Lake City, Utah, assignors to The University of Utah, Salt Lake City, Utah

Filed Jan. 13, 1975, Ser. No. 540,740

Int. Cl.² C07H *19/16*

U.S. Cl. 260—211.5 R **9 Claims**

1. Compounds of the formula:



in which R is selected from the group consisting of carboxamidine, carboxylic acid, carboxamide, methyl formimidate, thiocarboxamide, carboxamidoxime, carboxamidrazone, and cyano.

3,962,212
PHOSPHORYLATED CELLULOSE ESTER MEMBRANE FOR USE IN SEPARATION OR CONCENTRATION OF SUBSTANCES

Takezo Sano, Ibaragi, and Takatoshi Shimomura, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

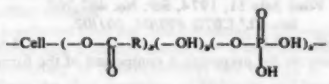
Filed May 13, 1974, Ser. No. 469,281

Claims priority, application Japan, May 16, 1973, 48-54887

Int. Cl.² C08L *1/12, 1/20;* C08B *7/00*

U.S. Cl. 260—219 **11 Claims**

1. A phosphorylated cellulose ester membrane soluble in solvent for use in separation or concentration of substances in an aqueous solution, having a phosphorus content of from 0.1 to 10% and the formula



wherein Cell is a cellulose structural unit,

is a lower aliphatic acid residue, and x, y and z are positive numbers satisfying the relation x+y+z=3.

3,962,213
METHOD OF DRYING COATED WEBS

John H. Flynn, 234 Elk Ave., New Rochelle, N.Y. 10802

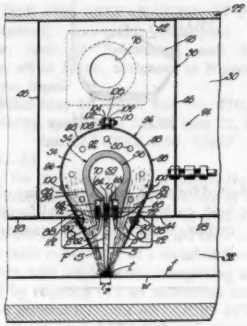
Filed Jan. 23, 1974, Ser. No. 435,851

Int. Cl.² B05D *3/08*

U.S. Cl. 427—224 **14 Claims**

1. A method of drying on a web face an applied coating containing volatile products, which comprises feeding the web past a station at a rate of at least 50 feet per minute, supplying a high-capacity burner at said station with a combustible air-gas mixture to sustain a stable flame sheet and directing the flame sheet substantially with its tip into contact with the coated face of the fed web transversely thereof for evaporating and igniting the volatile products in the passing coating, and confining the evaporated products to, and completely burning them within a fixed zone through which the coated face of the fed web passes, by directing into contact with the

coated face of the fed web on opposite sides of and at a spacing from zero to less than 1 inch from the contacting flame



sheet, stable air sheets of a velocity within a range from about 400 feet per minute to about 1700 feet per minute.

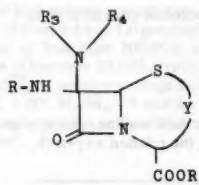
3,962,214

PROCESS FOR PREPARING AMINO SUBSTITUTED β-LACTAM ANTIBIOTICS

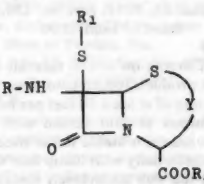
Theodore Goodson, Jr., and Wayne A. Spitzer, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed July 11, 1974, Ser. No. 487,703
Int. Cl.² C07D *499/04, 501/02*
U.S. Cl. 260—239.1 **1 Claim**

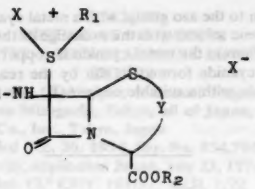
1. The process for preparing a compound of the formula



which comprises the steps of: (a) reacting in an inert solvent an alkylthio compound of the formula

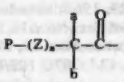


with chlorine, bromine, or sulfuryl chloride at a temperature between −80° and −25°C. to form the β-lactam halosulfonium halide of the formula



and (b) reacting said β-lactam halosulfonium halide in an inert solvent with an excess of an amine R_5R_6NH; wherein the formulas above

R is hydrogen, C_1–C_7 alkanoyl, benzoyl, C_1–C_4 alkylbenzoyl, halobenzoyl, C_1–C_4 alkoxybenzoyl, nitrobenzoyl, hydroxybenzoyl, or a group of the formula



wherein P is phenyl, C_1–C_4 alkylphenyl, C_1–C_4 alkoxyphenyl, halophenyl, nitrophenyl, hydroxyphenyl, protected hydroxyphenyl or a heteromonocyclic radical containing O, S, and/or N;

Z is O or S;

n is 0 or 1;

a is hydrogen or C_1–C_3 alkyl;

b is hydrogen, C_1–C_3 alkyl, hydroxy, protected hydroxy, amino, or protected amino;

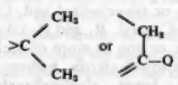
R_1 is C_1–C_3 alkyl or benzyl;

R_2 is hydrogen or a carboxylic acid protecting ester forming group;

R_3 and R_4 are hydrogen or C_1–C_4 alkyl;

X is chloro or bromo; and

Y is



wherein Q is methyl or acetoxymethyl, with the limitation that when *n* is 1, P is phenyl, C_1–C_4 alkylphenyl, C_1–C_4 alkoxyphenyl, nitrophenyl, hydroxyphenyl or protected hydroxyphenyl.

3,962,215

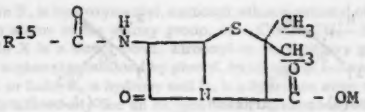
INTERMEDIATES FOR PREPARING SEMI-SYNTHETIC PENICILLINS AND PROCESSES RELATING THERETO

John H. Sellstedt, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

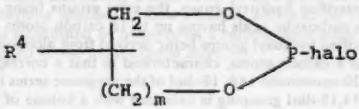
Continuation-in-part of Ser. No. 186,397, Oct. 4, 1971, Pat. No. 3,896,110. This application Jan. 14, 1972, Ser. No. 217,942
Int. Cl.² C07D *499/04, 501/02*
U.S. Cl. 260—239.1 **14 Claims**

1. A process for preparing a semi-synthetic penicillin which comprises:

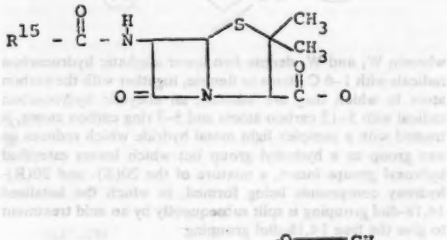
a. reacting a penicillin compound of the formula



with a phosphorylating agent of the formula

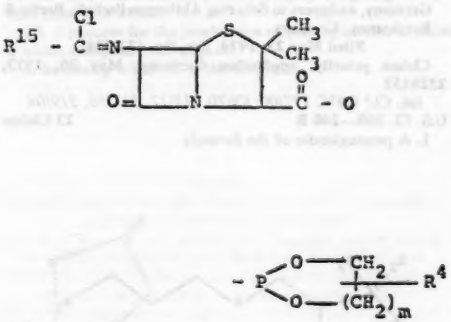


to produce a compound of the formula

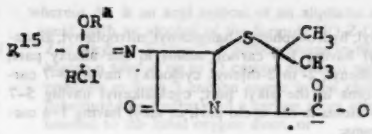


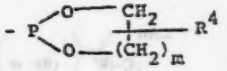
said reaction being carried out under anhydrous conditions in the presence of an inert non-hydroxylic organic solvent and a tertiary amine at a temperature in the range of about −40°C to about +10°C, the molar ratio of said penicillin compound to said phosphorylating agent being about 0.5:1 to about 3:1;

b. reacting said compound obtained in step (a) with an acid chloride in the presence of a tertiary amine at temperature between about −10°C and −65°C to produce an imino chloride compound of the formula

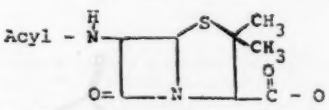


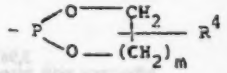
c. reacting said imino chloride with an alcohol at a temperature below about −10°C to produce an imino ether of the formula





d. reacting said imino ether with water at a temperature below about −20°C and treating the resulting compound with a reactive derivative of an organic carboxylic acid in the presence of a tertiary amine at a temperature between about 0°C and −60°C to produce a compound of the formula





e. and hydrolyzing the resulting acylated product to remove the carboxyl protective group and obtain a semi-synthetic penicillin; wherein:

M is selected from the class consisting of hydrogen, an alkali metal and a tertiary amine; R^{15} is selected from the class consisting of phenoxymethyl and benzyl; R^4 is selected from the class consisting of hydrogen and lower alkyl; R^a is selected from the class consisting of lower alkyl, phenyl(lower)alkyl, cycloalkyl of four through eight carbon atoms, phenoxy(lower)alkyl, (lower)alkoxy(lower)alkyl; and *m* is an integer from 1 to 6.

3,962,216

PENICILLINS

Harry Ferres, Horsham; Adrian Victor Kemmenoe, Westcott, and Desmond John Best, Sutton, all of England, assignors to Beecham Group Limited, England

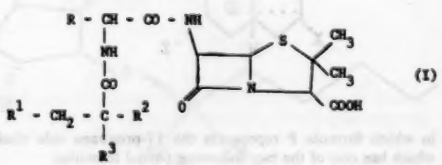
Division of Ser. No. 466,184, May 3, 1974. This application Jan. 22, 1975, Ser. No. 543,064

Claims priority, application United Kingdom, May 4, 1973, 21203/73

Int. Cl.² C07D 499/68, 499/70, 499/66

U.S. Cl. 260—239.1 **9 Claims**

1. A penicillin of formula (I):



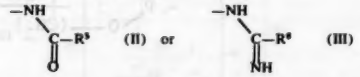
(I)

wherein

R is phenyl, hydroxyphenyl, halophenyl, nitrophenyl, alkoxyphenyl having 1–3 carbon atoms in the alkoxy part, aminophenyl, 2- or 3-thienyl, cycloalkyl having 3–7 carbon atoms in the alkyl part, cycloalkenyl having 5–7 carbon atoms in the cyclo part, or alkyl having 1–4 carbon atoms;

R^1 is carbamyl or carbamylmethyl;

R^2 is



(II) or (III)

in which R^5 is amino, mono- or di-alkylamino having 1–4 carbon atoms in the alkyl part, cyclohexylamino, hydrogen, alkyl of 1–4 carbon atoms or phenyl, and R^6 is amino, mono- or di-alkylamino having 1–4 carbon atoms in the alkyl part or cyclohexylamino;

R^3 is hydrogen or alkyl of 1–3 carbon atoms; or a pharmaceutically acceptable salt or hydrolyzable ester which converts to the free acid form in vivo.

3,962,217

PROCESS FOR THE MANUFACTURE OF Δ^{16}-STEROID-14β,18,20-TRIOLS AND -14β,20-DIOL-18-OLS OF THE PREGNANE SERIES

Hansuli Wehrli, Reinach, and Oskar Jeger, Zollikerberg, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

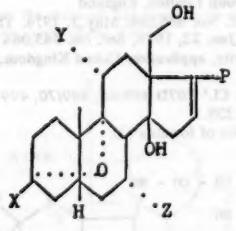
Continuation-in-part of Ser. No. 364,466, May 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 82,183, Oct. 19, 1970. This application Nov. 26, 1974, Ser. No. 527,334

Claims priority, application Switzerland, Oct. 24, 1969, 15902/69; July 24, 1970, 11242/70; May 30, 1972, 7966/72

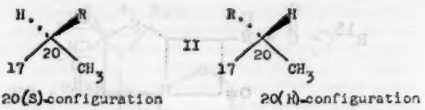
Int. Cl.² C07J 41/00

U.S. Cl. 260—239.55 R **11 Claims**

1. Process for the manufacture of 20-epimeric Δ^{16}-steroid-14β, 18,20-triols of the formula



in which formula P represents the 17-pregnane side chain which has one of the two following partial formulae



20(S)-configuration 20(R)-configuration

wherein R represents a free, esterified or etherified hydroxyl group, X an etherified or esterified hydroxyl group, Y an esterified hydroxyl group, and Z denotes a hydrogen atom or an esterified hydroxyl group, the ester groups being derived from carboxylic acids having up to 18 carbon atoms and the etherified hydroxyl groups being derived from alcohols having up to 8 carbon atoms, characterised in that a corresponding Δ^{16}-20-oxosteroid-14β, 18-diol of the pregnane series in which the 14,18-diol grouping is ketalized with a ketone of the formula

wherein W_1 and W_2 denote two lower aliphatic hydrocarbon radicals with 1–6 C-atoms or denote, together with the carbon atom to which they are bonded, an alicyclic hydrocarbon radical with 5–12 carbon atoms and 5–7 ring carbon atoms, is treated with a complex light metal hydride which reduces an oxo group to a hydroxyl group but which leaves esterified hydroxyl groups intact, a mixture of the 20(S)- and 20(R)-hydroxy compounds being formed, in which the ketalized 14,18-diol grouping is split subsequently by an acid treatment to give the free 14,18-diol grouping.

3,962,218

NOVEL PROSTANOIC ACID DERIVATIVES AND PROCESSES FOR THE PREPARATION THEREOF

Bernd Raduchel; Werner Skuballa; Helmut Vorbruggen; Walter Elger; Wolfgang Losert, and Olaf Loge, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

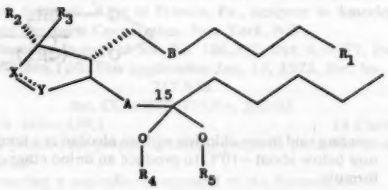
Filed May 23, 1974, Ser. No. 472,738

Claims priority, application Germany, May 30, 1973, 2328132

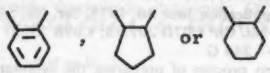
Int. Cl.² C07C 177/00; C07D 317/12, 317/50, 319/04

U.S. Cl. 260—240 R **23 Claims**

1. A prostaglandin of the formula



wherein R_1 is hydroxymethyl, carboxyl, alkoxycarbonyl of 1–8 carbon atoms in the alkoxy group, of —COO—CH_2—X—Y wherein X is a direct bond, carbonyl or carbonyloxy group and Y is phenyl substituted by phenyl, by alkoxy of 1–2 carbon atoms, or halo; R_2 is hydroxy and R_3 is a hydrogen atom or R_2 and R_3 collectively are an oxygen atom; A is (trans)—CH=CH—, B is —CH_2—CH_2 or (cis)—CH=CH—, R_4 and R_5 collectively are a ring-forming divalent group of the formula —Z— wherein Z is alkylene having 2–3 carbon atoms in the carbon chain and having a total of up to 23 carbon atoms or when alkylene contains at least 3 carbon atoms in the chain, alkylene substituted by hydroxy on a carbon atom other than one bonded to the ketal oxygen atom, or



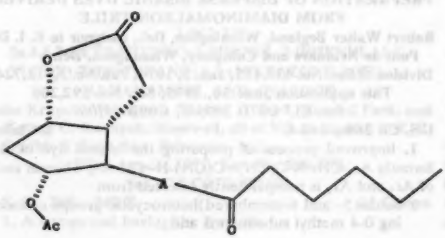
X—Y is

or when R_2 and R_3 collectively are an oxygen atom,

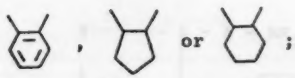
or HC=CH; and when R_1 is carboxyl, physiologically acceptable salts with a base.

23. A process for the production of prostaglandins of claim 1 which comprises the steps of:

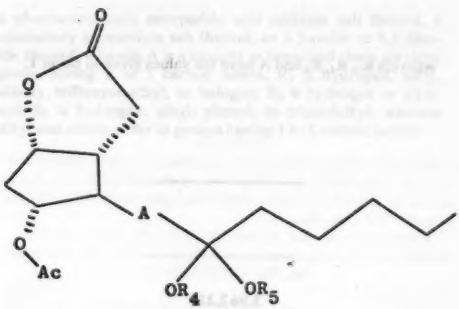
a. ketalizing a ketone of the formula



wherein Ac is an acyl radical of an aliphatic or aromatic acid, with an alcohol of the formula HO-Z-OH, wherein Z is alkylene having 2–3 carbon atoms in the chain and having a total of up to 23 carbon atoms or when alkylene contains at least 3 carbon atoms in the chain, alkylene substituted by hydroxy on a carbon atom other than one bonded to the ketal oxygen atom, or

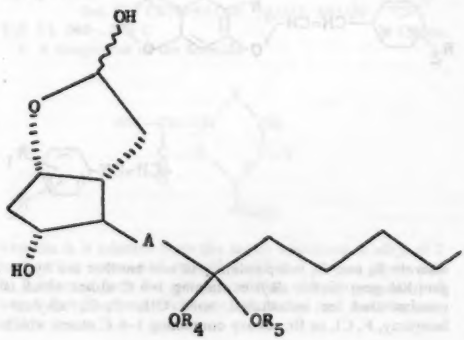


b. reducing the thus-obtained ketal of the formula



with diisobutylaluminum hydride or lithium tri-tert.-butoxyaluminum hydride; and

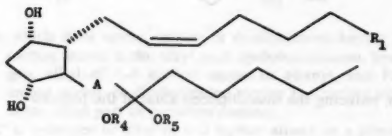
c. reacting the thus-produced hemiacetal of the formula



with a Wittig reagent of the formula

$Ph_3P = CH - (CH_2)_3 - R_1$

wherein Ph is phenyl to produce a compound of the formula



wherein R_1, R_4, R_5 and A have the values given in claim 1.

3,962,219

OPTICAL BRIGHTENERS

Alfons Dorlars, Leverkusen; Otto Neuner, Bergisch,Gladbach, and Hans Theidel, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

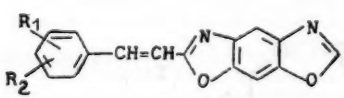
Filed Sept. 27, 1974, Ser. No. 509,839

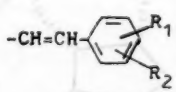
Claims priority, application Germany, Oct. 2, 1973, 2349480

Int. Cl.[2] C07D *417/02, 277/64*

U.S. Cl. 260—240 D 5 Claims

1. Compounds of the formula:





wherein R_1 and R_4 independently of one another are hydrogen; halogen; nitrile; alkyl containing 1–6 C atoms which is unsubstituted or substituted with OH, C_1–C_4 alkylcarbonyloxy, F, Cl, or Br; alkoxy containing 1–6 C atoms which is unsubstituted or substituted with OH, C_1–C_4 alkylcarbonyloxy, F, Cl, or Br; cycloalkyl having 5–7 ring members which is unsubstituted or substituted with C_1–C_4 alkyl; phenyl; phenyl substituted with 1 to 3 C_1–C_4 alkyl groups; C_1–C_4 alkoxycarbonyl unsubstituted or substituted with OH, F, Cl, Br, or C_1–C_4 alkoxy; or carboxyl.

3,962,220

PREPARATION OF DISPERSE BISANIL DYES DERIVED FROM DIAMINOMALEONITRILE

Robert Walter Begland, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 430,414, Jan. 3, 1974, Pat. No. 3,914,276.

This application June 30, 1975, Ser. No. 592,204

Int. Cl.[2] C07D *207/18;* C09B *55/00*

U.S. Cl. 260—240 G 2 Claims

1. One-step process of preparing the symmetrical bisanil dye of the formula $Ar_1CH{=}N{-}C(CN){=}C(CN){-}N{=}CH{-}Ar_2$ wherein Ar_1 and Ar_2 are the same and are selected from

1. benzo(5- and 6-membered)heterocyclic groups containing 0–4 methyl substituents and
2. 5-membered heterocyclic and 6-membered heterocyclic groups containing 0–3 substituents selected from NO_2, halogen, CN, C_{1-4} alkyl, C_{1-4} alkoxy, OCH_2-phenyl, phenyl, CF_3, OH, OC_{1-4} alkylene-$N(C_{1-4}$ alkyl$)_2$, C_{2-4} alkylene-Cl, $NHCONH_2$, NHCOA, $NHSO_2A$, SR_8, SO_2R_8, NHR_1, $NHCOC_{1-4}$ alkylene-B and $-NR_1R_2$ wherein:

a. R_1 is C_{1-4} alkyl or C_{2-4} alkylene-R_3;

b. R_2 is C_{1-4} alkyl, C_{2-4} alkylene-R_4 or, if Ar_1 or Ar_2 is phenyl, C_3 alkylene attached to a phenyl position which is ortho to the position to which the nitrogen is attached;

c. R_3 is CN, halogen, OH, phenyl, C_{1-4} alkoxy, OC_{1-4} alkylene-CN, CO_2A, OCOA, OCONHA or CO_2C_{1-4} alkylene-OCOA;

d. R_4 is CN, halogen, OH, phenyl, OC_{1-4} alkylene-CN, CO_2A, OCOA, CO_2C_{1-4} alkylene-OCOA, SO_2A, phthalimido, succinimido, glutarimido, $OCOCH{=}CH_2$, $CH_2{-}CH(OCOA)CH_2OA$ or $CH_2CH(OCONHA)CH_2OA$;

e. A is C_{1-4} alkyl or R_5;

f. B is halogen, C_{1-4} alkoxy or R_5;

g. R_5 is phenyl containing 0–2 substituents selected from C_{1-4} alkyl, C_{1-4} alkoxy, halogen, NO_2, CN, C_{1-4} alkyl-CONH and NR_6R_7 wherein each of R_6 and R_7 is independently selected from H and C_{1-4} alkyl, with at least one of R_6 and R_7 being C_{1-4} alkyl; and

h. R_8 is C_{1-4} alkyl, C_2H_4OH, C_{5-6} cycloalkyl or R_5,

which process comprises heating diaminomaleonitrile and at least two molar equivalents of the aromatic aldehyde Ar_1CHO in the presence of glacial acetic acid to produce the symmetrical bisanil dye of the formula $AR_1{-}CH = N{-}C(CN) = C(CN){-}N = CH{-}Ar_2$.

3,962,221

PREPARATION OF DISPERSE BISANIL DYES DERIVED FROM DIAMINOMALEONITRILE

Robert Walter Begland, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 430,415, Jan. 3, 1974, Pat. No. 3,912,724.

This application June 30, 1975, Ser. No. 592,206

Int. Cl.[2] C07D *207/18;* C09B *55/00*

U.S. Cl. 260—240 G 9 Claims

1. Improved process of preparing the bisanil dye of the formula $Ar_1{-}CH{=}N{-}C(CN){=}C(CN){-}N{=}CH{-}Ar_2$ wherein each of Ar_1 and Ar_2 is independently selected from

1 benzo(5- and 6-membered)heterocyclic groups containing 0-4 methyl substituents and

2 phenyl, naphthyl, 5-membered heterocyclic and 6-membered heterocyclic groups containing 0-3 substituents selected from NO_2, halogen, CN, C_{1-4} alkyl, C_{1-4} alkoxy, OCH_2phenyl, phenyl, CF_3, OH, OC_{1-4} alkylene-N(C_{1-4} alkyl)$_2$, C_{2-4} alkylene-Cl, $NHCONH_2$, NHCOA, $NHSO_2A$, SR_8, SO_2R_8, NHR_1, $NHCOC_{1-4}$ alkylene-B and $-NR_1R_2$ wherein:

a. R_1 is C_{1-4} alkyl or C_{2-4} alkylene-R_2;

b. R_2 is C_{1-4} alkyl, C_{2-4} alkylene-R_4, or, if Ar_1 or Ar_2 is phenyl, C_2 alkylene attached to a phenyl position which is ortho to the position to which the nitrogen is attached;

c. R_3 is CN, halogen, OH, phenyl, C_{1-4} alkoxy, OC_{1-4} alkylene-CN, CO_2A, OCOA, OCONHA or CO_2C_{1-4} alkylene-OCOA;

d. R_4 is CN, halogen, OH, phenyl, OC_{1-4} alkylene-CN, CO_2A, OCOA, CO_2C_{1-4} alkylene OCOA, SO_2A, phthalimido, succinimido, glutarimido, $OCOCH=CH_2$, CH_2-CH(OCOA)CH_2OA or CH_2CH(OCONHA)C-H_2OA;

e. A is C_{1-4} alkyl or R_5;

f. B is halogen, C_{1-4} alkoxy or R_6;

g. R_5 is phenyl containing O-2 substituents selected from C_{1-4} alkyl, C_{1-4} alkoxy, halogen, NO_2, CN, C_{1-4} alkyl - CONH and NR_6R_7 wherein each of R_6 and R_7 is independently selected from H and C_{1-4} alkyl, with at least one of R_6 and R_7 being C_{1-4} alkyl; and

h. R_8 is C_{1-4} alkyl, C_2H_4OH, C_{5-6} cycloalkyl or R_5, with at least one of Ar_1 and Ar_2 being a heterocyclic group selected from (1) and (2), said bisanil dye being substantially free of imidazole impurities, which process comprises the steps:

1 condensing diaminomaleonitrile and the aromatic aldehyde Ar_1CHO to produce the monoanil Ar_1-CH=N-C(CN)=C(CN)-NH_2;

2 reducing the monoanil from step (1) to produce Ar_1CH_2NH-C(CH)=C(CN)-NH_2;

3 condensing the product from step (2) and the aromatic aldehyde Ar_2CHO, which aldehyde is the same as or different from the aldehyde of step (1), to produce the monoanil Ar_1CH_2NH-C(CN)=C(CN)-N=CH-Ar_2; and

4 oxidizing the monoanil from step (3) with manganese dioxide, at ambient temperature, in the presence of a solvent selected from the group consisting of dimethylformamide, dimethylacetamide, dimethylsulfoxide, hexamethylphosphoramide and N-methylpyrrolidone to produce the bisanil dye Ar_1-CH = N-C(CN) = C(CN)-N = CH-Ar_2.

3,962,222

3a,4,6,7-TETRAHYDRO-3-PHENYL-7-(PHENYLALKYLENE)-THIOPYRANO[4,3-c]PYRAZOLE-3(3H)-ALKANAMINE, AND ANALOGS

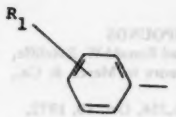
John Krapcho, Somerset; Chester F. Turk, Kendall Park, and George C. Rovnyak, Hopewell, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

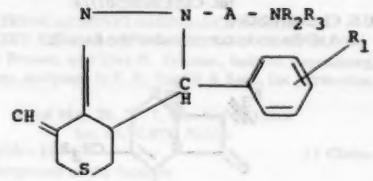
Filed Aug. 1, 1975, Ser. No. 600,998

Int. Cl.² C07D *495/06*

U.S. Cl. 260—240 F 11 Claims

1. A compound having the formula





a pharmaceutically acceptable acid addition salt thereof, a quaternary ammonium salt thereof, or a 5-oxide or 5,5-dioxide thereof, wherein A is a straight or branched chain alkylene group having 2 to 5 carbon atoms; R_1 is hydrogen, alkyl, alkoxy, trifluoromethyl, or halogen; R_2 is hydrogen or alkyl; and R_3 is hydrogen, alkyl, phenyl, or phenylalkyl; wherein alkyl and alkoxy refer to groups having 1 to 8 carbon atoms.

3,962,223

SUBSTITUTED CEPHENE-4-CARBOXYLATES AND THEIR METHOD OF PREPARATION

Jacques Martel, Bondy, and Rene Heymes, Romainville, both of France, assignors to Roussel-UCLAF, Paris, France

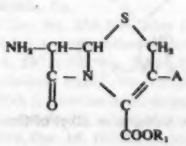
Filed Jan. 2, 1973, Ser. No. 320,493

Claims priority, application France, Dec. 31, 1971, 71.47758; Dec. 31, 1971, 71.47759; Dec. 31, 1971, 71.47760; Dec. 31, 1971, 71.47761; Dec. 31, 1971, 71.47762; Dec. 31, 1971, 71.31699

Int. Cl.² C07D *501/06, 501/22, 501/29*

U.S. Cl. 260—243 C 8 Claims

1. A compound of the formula



wherein A is selected from the group consisting of alkyl of 2 to 5 carbon atoms and cycloakyl of 3 to 7 carbon atoms and R_1 is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms, trichloroethyl, benzyl and methoxybenzyl.

3,962,224

CEPHALOSPORIN COMPOUNDS

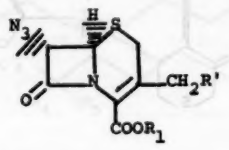
Burton G. Christensen, Scotch Plains, and Ronald W. Ratcliffe, North Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. Nos. 296,356, Oct. 10, 1972, abandoned, and Ser. No. 267,845, June 30, 1972, abandoned, said Ser. No. 296,356, is a continuation-in-part of Ser. No. 244,271, April 14, 1972, abandoned, and Ser. No. 267,846, June 30, 1972, abandoned. This application Mar. 5, 1973, Ser. No. 336,561

Int. Cl.[2] C07D 501/14

U.S. Cl. 260—243 C 4 Claims

1. A di-7α-azido compound of the formula:



wherein R_1 is a blocking group and R′ is pyrrolidinylcarbonyloxy, carbamoyloxy, N-substituted carbamoyloxy, or N,N-disubstituted carbamoyloxy wherein the carbamoyl substituents may be the same or different and are lower alkyl, halogented lower alkyl, lower alkoxy, chloro, bromo, fluoro, benzyl, p-methoxy benzyl, phenethyl, p-methoxy phenethyl, or p-aminophenethyl.

3,962,225

NITRO(TETRAHYDRO-2H-1,3-THIAZIN-2-YLIDENE)-METHYL ALDEHYDES AND KETONES

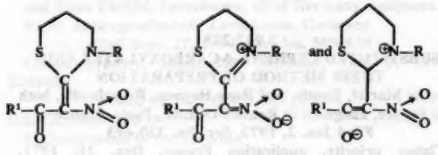
James E. Powell, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 468,122, May 8, 1974, abandoned. This application Feb. 6, 1975, Ser. No. 547,417

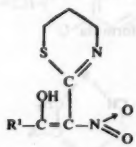
Int. Cl.[2] C07D 279/06

U.S. Cl. 260—243 R 3 Claims

1. A resonance hybrid in which the three significant forms which contribute thereto are represented by the formulae



and including when R is hydrogen, the enol form represented by the formula



wherein R is hydrogen, halogen or alkyl of from one to eight carbon atoms;

R^1 is hydrogen or contains up to 30 carbon atoms and is selected from alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, haloalkyl, haloalkenyl, alkoxyalkyl, alkylthioalkyl, cyanoalkyl, alkylsulfinylalkyl; and phenyl optionally, substituted on the ring by one or more of halogen, nitro, methylsulfonyl, cyano, alkyl, phenyl, alkoxy, phenoxy; heteroaryl selected from furanyl, 2- and 3-pyridyl; and their corresponding phenylmethyl and heteroarylmethyl counterparts.

3,962,226

3-NITROOXYCEPHAM COMPOUNDS AND PROCESS FOR PREPARING DESACETOXYCEPHALOSPORINS THEREFROM

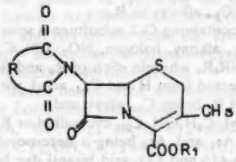
Stjepan P. Kukolja, Indianapolis, and Steven R. Lammert, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 267,850, June 30, 1972, abandoned. This application Mar. 27, 1974, Ser. No. 455,443

Int. Cl.[2] C07D 499/04, 501/02

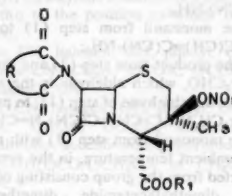
U.S. Cl. 260—243 C 31 Claims

1. A process for preparing a mixture of a compound of the formula IV



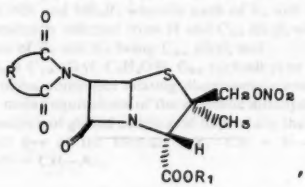
(IV)

a compound of the formula V



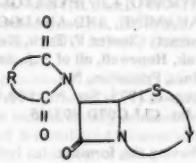
(V)

and a compound of the formula VI

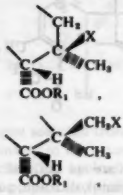


(VI)

which comprises the step of reacting a compound of the formula



in which Y is



or a mixture of the two, with silver nitrate, in which, in the above formulae, R is the residue of an imide derived from a dicarboxylic acid, R_1 is a carboxy protecting group, and X is chlorine or bromine.

3,962,227

3-HALO CEPHALOSPORINS

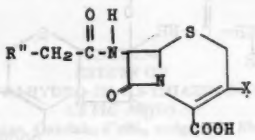
Robert R. Chauvette, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 335,414, Feb. 23, 1973, abandoned. This application Apr. 1, 1974, Ser. No. 457,150

Int. Cl.² C07D *501/60*

U.S. Cl. 260—243 C 5 Claims

1. A compound of the formula



wherein R'' is 2-thienyl, 3-thienyl, 2-furyl, 2-oxazolyl, 2-thiazolyl, or 1-tetrazolyl;

X is chloro or bromo;

or the non-toxic pharmaceutically acceptable salts thereof.

3,962,228

3-BENZOYLPROPIONAMIDO CEPHALOSPORANIC DERIVATIVES

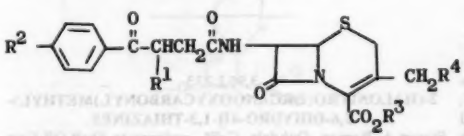
Peter H. L. Wei, Springfield, and Ronald J. McCaully, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 18, 1974, Ser. No. 452,087

Int. Cl.² C07D *499/44*, *501/20*

U.S. Cl. 260—243 C 9 Claims

1. A compound of the formula:



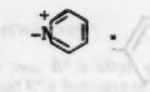
in which

R^1 is —OH, alkoxycarbonyloxy of 2 to 6 carbon atoms, arylsulfonyl of 6 to 10 carbon atoms or thiocyanato;

R^2 is —H, halo or phenyl;

$R^3$is —H, an alkali metal or $-NH_4$, and

R^4 is —H, alkanoyloxy of 2 to 6 carbon atoms, or when taken with the 3-carboxy group,



3,962,229

2-(THIOCARBONYLAMINO)ACETAMIDO-7α-METHOXY CEPHALOSPORANIC ACID COMPOUNDS

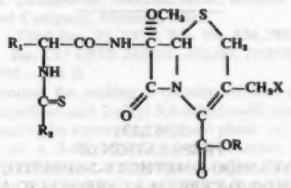
Hermann Breuer, and Uwe D. Treuner, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 28, 1975, Ser. No. 581,449

Int. Cl.² C07D *501/20*

U.S. Cl. 260—243 C 11 Claims

1. A compound of the formula



wherein R is hydrogen, lower alkyl, phenyl, tri(halo)lower alkyl, phenyl-lower alkyl, aluminum, alkali metal, alkaline earth metal, lower alkylamine or

R_1 is phenyl, substituted phenyl wherein the phenyl substituent is lower alkyl, halogen, hydroxy, amino, ureido or methylsulfonylamino, furyl, thienyl or pyridyl; R_2 and R_4 each is hydrogen or lower alkyl; R_3 is lower alkyl, phenyl or phenyl-lower alkyl; and X is hydrogen, lower alkanoyloxy or azido.

3,962,230

P-HYDROXYMETHYLPHENYLACETAMIDOCEPHALOSPORINS

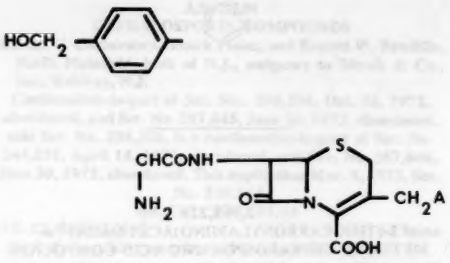
George L. Dunn, Wayne, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline & French Laboratories, Inc., Philadelphia, Pa.

Division of Ser. No. 359,566, May 11, 1973, Pat. No. 3,891,634, which is a continuation-in-part of Ser. No. 262,903, June 14, 1972, Pat. No. 3,867,380, which is a continuation-in-part of Ser. No. 116,598, Feb. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 99,296, Dec. 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 289,499, Dec. 15, 1972, Pat. No. 3,855,213, which is a continuation-in-part of Ser. No. 262,903, June 14, 1972, and Ser. No. 116,599, Feb. 18, 1971, abandoned. This application Feb. 25, 1975, Ser. No. 552,916

Int. Cl.² C07D *501/20*

U.S. Cl. 260—243 C 3 Claims

1. A compound of the formula



wherein A is methoxy or methylthio, or a pharmaceutically acceptable salt thereof.

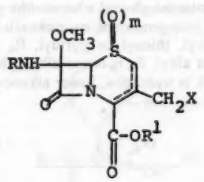
3,962,231

PREPARATION OF 7-ACYLAMIDO-7-METHOXY-3-SUBSTITUTED METHYL-3(OR 2)-CEPHEM-4-CARBOXYLIC ACID AND ITS S-OXIDES

Seemon H. Pines, Murray Hill, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 207,980, Dec. 14, 1971, Pat. No. 3,867,378. This application Oct. 21, 1974, Ser. No. 516,346
Int. Cl.² C07D 501/02
U.S. Cl. 260—243 C **5 Claims**

1. A process for preparing a compound of the formula:



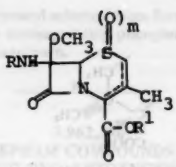
wherein R is an acyl radical of the formula:

wherein

R^2 is hydrogen, halo, amino, hydroxy, tetrazolyl or carboxy;

R^3 is phenylthio, cyano, phenyl, or substituted phenyl, heterocycle or substituted heterocycle, heterocyclic thio or substituted heterocyclic thio group wherein said heterocycle is selected from the group consisting of furyl, thienyl, thiazolyl, isothiazolyl, oxadiazolyl and thiadiazolyl, and wherein said substituent on the phenyl, heterocycle and heterocyclic thio groups is selected from the group consisting of halo, carboxymethyl, aminomethyl, nitro, methoxy and methyl;

R^1 is trichloroethyl, tert-butyl, benzoylmethyl, p-methoxybenzyl, benzyl, benzhydryl, trimethylsilyl, methoxymethyl, benzoylmethylcarbonyloxy, or tert-butylcarbonyloxy; X is hydroxy or lower alkanoyloxy and *m* is an integer of 0 or 1 which comprises treating a compound of the formula:



wherein R, R^1 and *m* are as defined above with selenium dioxide in ethanol, propanol, dioxane, acetic acid or propionic acid.

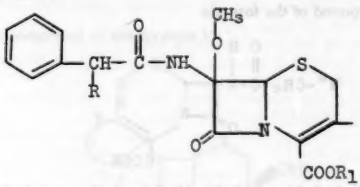
3,962,232

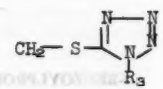
7-METHOXYCEPHALOSPORINS

Gary A. Koppel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 5, 1973, Ser. No. 413,097
Int. Cl.² C07D 501/20
U.S. Cl. 260—243 C **5 Claims**

1. A compound of the formula





in which

R is carboxy or an alkali metal salt thereof;

R_1 is hydrogen, an alkali metal cation, or a readily removable ester forming group; and

R_3 is hydrogen C_1–C_4 alkyl, or phenyl.

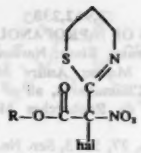
3,962,233

2-(HALONITRO(ORGANOOXYCARBONYL)METHYL)-5,6-DIHYDRO-4H-1,3-THIAZINES

Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 468,123, May 8, 1974, abandoned. This application Feb. 19, 1975, Ser. No. 551,171
Int. Cl.² C07D 279/06
U.S. Cl. 260—243 R **1 Claim**

1. A 2-(halonitro(organooxycarbonyl)methyl)-5,6-dihydro-4H-1,3-thiazine of the formula



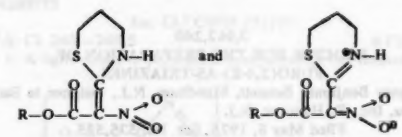
wherein "hal" is halogen selected from chlorine, bromine and fluorine, and R contains up to thirty carbon atoms and is alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, haloalkyl, haloalkenyl, mono- and poly-(alkoxy)alkyl, alkylthioalkyl, phenylthioalkyl, benzylthioalkyl, cyanoalkyl, hydroxyalkyl, alkylsulfinylalkyl, phenyl or phenalkyl or either substituted on the ring by one to two of one or more of halogen, nitro, cyano, alkyl, phenyl, alkoxy or phenoxy; is aminoalkyl, $-(CH_2)_m-NR^3R^4$, wherein m is one or two, R^3 is alkyl, cycloalkyl, alkenyl, phenyl or phenalkyl, and R^4 is hydrogen or one of the moieties represented by R^3; or is $-(CH_2)_n-R^5$, wherein n is zero, one or two, and R^5 is a heteromonocyclic moiety of from five to six carbon atoms in the ring, containing in the ring carbon atoms and one to two of oxygen (—O—), sulfur (—S—) and nitrogen (—N— or —NH—) bonded to carbon in the ring.

3,962,234
ESTERS OF NITRO(TETRAHYDRO-2H-1,3-THIAZIN-2-YLIDENE)ACETIC ACIDS

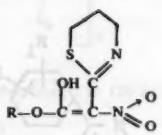
Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 468,125, May 8, 1974, abandoned. This application Mar. 3, 1975, Ser. No. 554,371
Int. Cl.² C07D 279/06
U.S. Cl. 260—243 R **7 Claims**

1. A resonance hybrid in which the significant forms are represented by the formulae



and the enol form represented by the formula



wherein R contains up to thirty carbon atoms and is alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, alkadienyl, haloalkyl, haloalkenyl, mono- and poly-(alkoxy)alkyl, alkylthioalkyl, phenylthioalkyl, benzylthioalkyl, cyanoalkyl, hydroxyalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, phenyl or phenalkyl or either substituted on the ring by one to two of one or more of halogen, nitro, cyano, alkyl, phenyl, alkoxy or phenoxy; is aminoalkyl, $-(CH_2)_m-NR^3R^4$,

wherein m is one or two, R^3 is alkyl, cycloalkyl, alkenyl, phenyl or phenalkyl, and R^4 is hydrogen or one of the moieties represented by R^3; or is

$-(CH_2)_n-R^5$,

wherein n is zero, one or two, and R^5 is a heteromonocyclic moiety of from five to six carbon atoms in the ring, containing in the ring carbon atoms and one to two of oxygen (—O—), sulfur (—S—) and nitrogen (=N— or —NH—) bonded to carbon in the ring.

3,962,235
PROCESS FOR MAKING α-CHLORINATED DERIVATIVES OF 2-ALKYL-2-OXAZOLINES AND 2-ALKYL-5,6-DIHYDRO-4H-OXAZINES

Thomas A. Chamberlin, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 25, 1974, Ser. No. 436,780
Int. Cl.² C07D 265/08, 273/00, 290/00
U.S. Cl. 260—244 R **12 Claims**

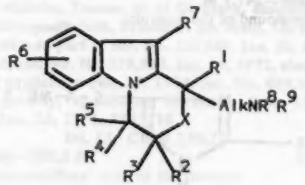
1. A process for making α-chlorinated derivatives of 2-alkyl-2-oxazolines and 2-alkyl-5,6-dihydro-4H-oxazines comprising reacting by contacting in liquid phase (a) a 2-alkyl-2-oxazoline or a 2-alkyl-5,6-dihydro-4H-oxazine with (b) a t-alkyl hypochlorite at a temperature below the thermal decomposition temperatures of said t-alkyl hypochlorite.

3,962,236
OXAZINOINDOLE- AND THIAZINOINDOLE DERIVATIVES

Christopher A. Demerson, St. Laurent; Leslie G. Humber, Dollard-des-Ormeaux; George Santroch, Montreal; Thomas A. Dobson, Dollard-des-Ormeaux, and Ivo Jirkovsky, Montreal, all of Canada, assignors to Ayerst McKenna and Harrison Ltd., Montreal, Canada

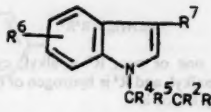
Division of Ser. No. 226,287, Feb. 14, 1972, Pat. No. 3,833,575. This application May 28, 1974, Ser. No. 473,646
Int. Cl.² C07D 265/16, 273/00, 295/00
U.S. Cl. 260—244 R **18 Claims**

1. A process for preparing a compound of formula I



I.

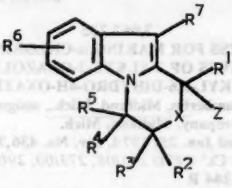
in which R^1 is lower alkyl or lower cycloalkyl; R^2, R^3, R^4 and R^5 are the same or different selected from the group consisting of hydrogen or lower alkyl; R^6 is hydrogen, lower alkyl, hydroxy, lower alkoxy, lower alkanoyloxy, nitro or halo; R^7 is lower alkyl; X is oxy or thio; Alk is an alkylene selected from the group consisting of $CR^{10}R^{11}$, $CR^{10}R^{11}CR^{12}R^{13}$, $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}$ and $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}CR^{16}R^{17}$ wherein R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16} and R^{17} are hydrogen or lower akyl; and R^8 and R^9 each are hydrogen; which comprises reacting in the presence of an inert, non-polar, organic solvent for 10 minutes to 60 hours a compound of formula III



III.

in which R^7 are as defined herein and X^1 is hydroxy or mercapto, with a compound of formula

in which R^1 is lower alkyl or lower cycloalkyl and Z is Alk-NO_2 in the presence of from 0.01 to 100 molar equivalents of a Friedel-Crafts catalyst, to obtain a compound of formula V



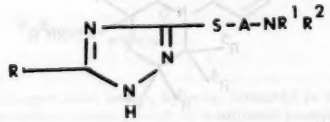
and reducing the compound of formula V with a complex metal hydride to give the corresponding compound of formula I.

3,962,237
1 (H)-1,2,4-TRIAZOLE DERIVATIVES

John Terence Arnott Boyle, and John Christopher Saunders, both of Maidenhead, England, assignors to John Wyeth & Brother Limited, Maidenhead, England

Filed Feb. 6, 1975, Ser. No. 547,669
Claims priority, application United Kingdom, Feb. 11, 1974, 6139/74
Int. Cl.² C07D *249/08*
U.S. Cl. 260—247.1 M 7 Claims

1. A compound of the formula:



wherein,

R is phenyl or substituted phenyl in which said substituent is halo, lower alkyl, lower alkoxy, nitro or trihalo(lower-)alkyl;

A is lower alkylene;

R^1 and R^2 are independently hydrogen or lower alkyl or, when taken together with the nitrogen atom to which they are attached, represent pyrrolidino, piperidino, or morpholino;

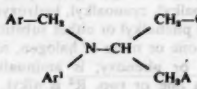
or a pharmaceutically acceptable acid addition salt thereof.

3,962,238
ETHERS OF N-PROPANOL AMINE

Roland Yves Mauvernay, Riom; Norbert Busch, Loubeyrat; Jacques Moleyre, Mozac; André Monteil, Gerzat, and Jacques Simond, Chamalieres, all of France, assignors to Centre Europeen de Recherches Mauvernay "CERM", Riom, France

Filed Feb. 27, 1973, Ser. No. 336,357
Claims priority, application France, Mar. 6, 1972, 72.07647
Int. Cl.² C07D *295/00*
U.S. Cl. 260—247.2 B 6 Claims

1. An ether of n-propanolamine having the formula



wherein A is morpholino, pyrrolidino, piperidyl, and di-lower-alkyl amino, R is a straight or branched chain lower alkyl, or benzyl, Ar is aryl and Ar^1 is aryl or pyridyl, and pharmacologically acceptable salts thereof.

3,962,239
METHOD FOR PRODUCING CYCLIC TRIMERS OF ORGANIC ISOCYANATES

Zbyněk Bukač, and Jan Šebenda, both of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Feb. 21, 1975, Ser. No. 551,514
Claims priority, application Czechoslovakia, Feb. 28, 1974, 1478-74
Int. Cl.² C07D *251/34*
U.S. Cl. 260—248 NS 13 Claims

1. A method for producing cyclic trimers of organic isocyanates, wherein an organic isocyanate or its solution is added to a solution of the catalyst which is sodium dihydrobis-/alkoxyethoxy/aluminate of the formula

$$NaAlH_2(OCH_2CH_2OR)_2$$

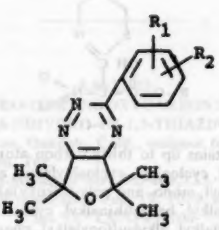
where R is an alkyl group with 1 to 4 carbon atoms.

3,962,240
PROCESS FOR THE PREPARATION OF FURO(3,4-E)-AS-TRIAZINES

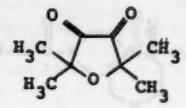
Gregory Benjamin Bennett, Mendham, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed May 8, 1975, Ser. No. 575,525
Int. Cl.² C07D *253/08*
U.S. Cl. 260—248 AS 10 Claims

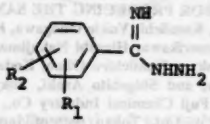
1. A process for preparing a compound of the formula



which comprises treating a compound of the formula



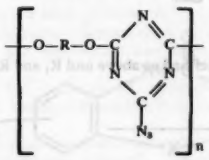
with a compound of the formula



under an inert atmosphere in the presence of an inert organic solvent,
where
R_1 and R_2 each independently represent hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl, straight chain lower alkoxy, amino, nitro or trifluoromethyl, and
provided that
i. when one of R_1 and R_2 represents nitro, the other is other than nitro or trifluoromethyl;
ii. when R_1 and R_2 represent trifluoromethyl, they are on other than adjacent carbon atoms,
iii. when R_1 and R_2 represent t-butyl, they are on other than adjacent carbon atoms, and
iv. when one of R_1 and R_2 is trifluoromethyl and the other is t-butyl, they are on other than adjacent carbon atoms.

3,962,241
LIGHT-SENSITIVE POLYMERIC COMPOUNDS
Donald Noel Hunter, Great Bookham, England, assignor to U.S. Philips Corporation, New York, N.Y.
Filed July 22, 1974, Ser. No. 490,724
Claims priority, application United Kingdom, July 31, 1973, 36289/73
Int. Cl.² C07D *251/46*
U.S. Cl. 260—249.5 **6 Claims**

1. A light-sensitive polymeric compound of the formula I



I

in which formula
n is a whole number from 2 to 120 and
R represents
phenylene - 1,3
phenylene - 1,4
1- phenylcarbonyl-phenylene - 2,4
1- phenylcarbonyl-phenylene - 2,6
2,2′ - diphenylcarbonyl
2,3′ - diphenylcarbonyl
or an
1 - alkylcarbonyl-phenylene - 2,5
1 - alkylcarbonyl-phenylene - 2,4
1 - alkylcarbonyl-phenylene - 2,6
in which the alkyl group contains from 1 to 4 carbon atoms,
a naphthylene - 2,7
naphthylene - 2,6 or
naphthylene - 2,4 - group
wherein the phenyl groups, if desired, are substituted with one or two alkyl groups containing from 1 to 4 carbon atoms or a phenyl group.

3,962,242
3-(5-NITRO-2-FURYL)-6-CYANO-S-TRIAZOLO(4,3-b)PYRIDAZINE
Herbert Berger, Mannheim-Kafertal; Rudi Gall, Grossachen; Max Thiel; Wolfgang Vömel, both of Mannheim, and Winfriede Sauer, Mannheim-Wallstadt, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim-Waldhof, Germany
Division of Ser. No. 316,197, Dec. 18, 1972. This application Jan. 30, 1975, Ser. No. 545,661
Claims priority, application Germany, Jan. 21, 1972, 2202745
Int. Cl.² C07D *237/26*
U.S. Cl. 260—250 AC **1 Claim**

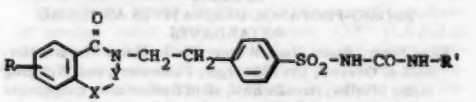
1. 3-(5-nitro-2-furyl)-6-cyano-s-triazolo[4,3-b]pyridazine.

3,962,243
MEPYRAMINE THEOPHYLLINE ACETATE
Cristobal Martinez Roldan; Miguel Fernandez Brana, and Jose Maria Castellano Berlanga, all of Madrid, Spain, assignors to Laboratories Made, S.A., Madrid, Spain
Continuation-in-part of Ser. No. 396,426, Sept. 12, 1973, abandoned. This application Oct. 16, 1974, Ser. No. 515,188
Int. Cl.² C07D *473/08*
U.S. Cl. 260—253 **1 Claim**

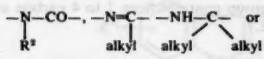
1. 2-[(2-dimethylaminoethyl) (p-methoxybenzyl)amino]-pyridine 1,2,3,6-tetrahydro-1,3-dimethyl-2,6-dioxopurin-7-acetate.

3,962,244
BENZENE SULFONYL UREAS
Rudi Weyer, Frankfurt am Main; Walter Aumuller, Kelkheim, Taunus; Ruth Heerdt, Mannheim; Volker Hitzel, Lorsbach, Taunus; Helmut Weber, Frankfurt am Main, and Karl Muth, Kelkheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Continuation-in-part of Ser. No. 219,549, Jan. 20, 1972, abandoned, and Ser. No. 219,533, Jan. 20, 1972, abandoned. This application July 17, 1974, Ser. No. 489,103
Claims priority, application Germany, Dec. 13, 1971, 2161697; Jan. 23, 1971, 2103118
Int. Cl.² C07D *239/72*
U.S. Cl. 260—256.5 R **13 Claims**

1. A benzenesulfonyl urea of the formula



in which
R represents a hydrogen, chlorine, or bromine atom, a methoxy or methyl group,
—X—Y— represents —N=CH—, —NH—CH_2—, —NH—CO—,



the alkyl herein containing from 1 to 4 carbon atoms,

R^2 represents an alkyl group having from 1 to 4 carbon atoms,

R′ represents an alkyl group having from 3 to 6 carbon atoms, a cycloalkyl group having from 5 to 8 carbon atoms, 3-ethylcyclopentyl, methyl-cyclopentyl, dimethyl-cyclopentyl, 4-alkylcyclohexyl having from 1 to 3 carbon atoms in the alkyl group, cyclopentenyl, cyclohexenyl, cycloheptenyl, 4-chloro-cyclohexyl, 4,4-dimethylcy-clohexyl, 3-methylcyclopentenyl, 4-methylcyclohexenyl; endoalkylene-cyclohexyl, endoalkylene-cyclohexenyl, each having 1 to 2 endoalkylene carbon atoms; bicyclo-(2.2.1) hept-2-2n-7-yl, or the physiologically tolerable salts thereof.

3,962,245

DIALKYLSULFONAMIDE DYES

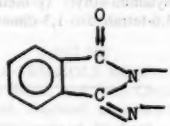
Robert Jerome Tucker, Hackettstown, and Richard Spector, Kendall Park, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 431,199, Jan. 7, 1974, Pat. No. 3,909,442. This application Jan. 16, 1975, Ser. No. 541,546

Int. Cl.² C07D *239/00*

U.S. Cl. 260—256.5 R **2 Claims**

1. A compound of formula



wherein R is an alkyl group of 1–5 carbon atoms and *n* is an integer of 1–4.

3,962,246

BROMO-PROPANOL DERIVATIVES AS FLAME RETARDANTS

Peter Borer, Basel; Hans-Werner Finck; Horst Mayerhoefer, both of Oberwil; Urs Sollberger, Fullinsdorf, and Wolfgang Heinz Mueller, Neuallschwil, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

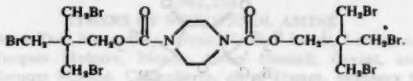
Filed July 19, 1974, Ser. No. 490,124

Claims priority, application Switzerland, July 25, 1973, 10838/73

Int. Cl.² C07D *295/18*

U.S. Cl. 260—268 C **1 Claim**

1. A compound of the formula:



3,962,247

ALPHA-CYANOAMINE COMPOUNDS AND A PROCESS FOR PRODUCING THE SAME

Katsumi Sakai, Kamiichi; Yukio Onogawa, Komae; Yoshitaka Inamoto, Namerikawa; Hiroshi Nakajima, Toyama; Yasuo Fujimoto, Tokyo; Kuniichiro Ohno, Kodaira; Masashi Yoshida, Souka, and Shigehito Araki, Tokyo, all of Japan, assignors to Fuji Chemical Industry Co., Ltd. and Nippon Chemiphar Co., Ltd., Tokyo, both of, Japan

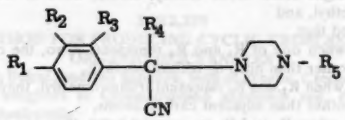
Filed Aug. 6, 1974, Ser. No. 495,138

Claims priority, application Japan, July 16, 1974, 49-80727; July 16, 1974, 49-80728; July 16, 1974, 49-80729

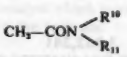
Int. Cl.² C07D *241/12*

U.S. Cl. 260—268 CN **8 Claims**

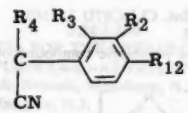
1. An α-cyanoamine compound of the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein R_1 is halogen or C_1 to C_3 alkoxy, R_2 and R_3 are each hydrogen, or C_1 to C_3 alkoxy, R_4 is hydrogen or C_1 to C_3 alkyl, R_5 is selected from the group consisting of R_8COOR_9, wherein R_8 is C_1 to C_3 alkylene and R_9 is C_1 to C_3 alkyl,



wherein R_{10} and R_{11} are each hydrogen or C_1 to C_3 alkyl, or R_{10} and R_{11} are joined with the nitrogen atom to form pyrrolidino, and



wherein R_3, R_3 and R_4 are defined as above and R_1 and R_{12} are C_1 to C_3 alkoxy.

3,962,248

PROCESS FOR MAKING 11-PIPERAZINO-DIAZEPINES, OXAZEPINES, THIAZEPINES AND AZEPINES

Josef Schneider, Minusio, Switzerland, assignor to Sandoz, Inc., Hanover, N.J.

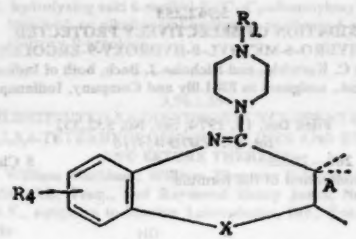
Continuation of Ser. No. 346,343, March 29, 1973, abandoned. This application Feb. 26, 1975, Ser. No. 553,142

Claims priority, application Switzerland, Apr. 4, 1972, 4898/72; Apr. 4, 1972, 4901/72

Int. Cl.² C07D *403/04, 413/04, 417/04*

U.S. Cl. 260—268 TR **8 Claims**

1. A process for the production of a compound of formula I,



I

wherein

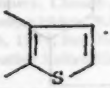
R_1 is hydrogen, alkoxyalkyl of 2 to 6 carbon atoms in the aggregate thereof, alkyl of 1 to 4 carbon atoms, hydroxyalkyl of 1 to 4 carbon atoms, or alkanoyl-oxalkyl of 3 to 22 carbon atoms in the aggregate thereof,

R_4 is hydrogen, alkyl, alkoxy or alkylthio, wherein the alkyl groups have 1 to 4 carbon atoms, halogen, or trifluoromethyl, and

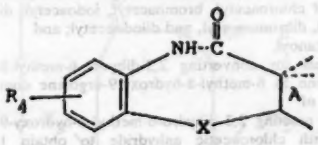
a. A is

wherein R_2 is hydrogen, alkyl, dialkylaminosulphonyl, alkylsulphonyl, wherein the alkyl groups have 1 to 4 carbon atoms, alkoxy or alkylthio of 1 to 4 carbon atoms, halogen, nitro, trifluoromethylsulphonyl, trifluoromethoxy, trifluoromethylthio, acetyl, cyano or trifluoromethyl, and R_3 is hydrogen, halogen or alkyl of 1 to 4 carbon atoms, and X is $-CH_2-$, $-O-$, $-S-$, $-NH$ or $-N$-alkyl wherein the alkyl group has 1 to 3 carbon atoms, or

b. A is

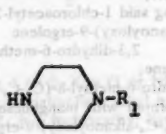


and X is $-CH_2-$ or $-S-$, which comprises reacting a compound of formula II,



II

wherein X, A and R_4 are as defined above, with a metal-amine complex wherein the metal is titanium, zirconium, hafnium or vanadium, and the amine is a compound of formula III,



III

wherein R_1 is as defined above.

3,962,249

1-(3-PHENYLPROPYL)-4-FUROYLPIPERAZINE DERIVATIVES

Tsutomu Irikura, Tokyo, Japan, assignor to Kyorin Seiyaku Kabushiki Kaisha, Tokyo, Japan

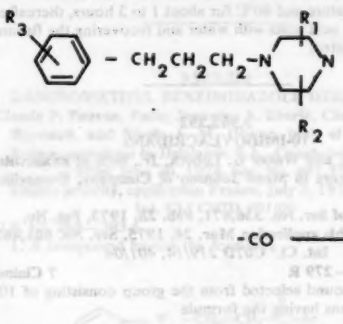
Filed Mar. 6, 1975, Ser. No. 555,992

Claims priority, application Japan, Mar. 6, 1974, 49-26067; Sept. 26, 1974, 49-110709

Int. Cl.² C07D *405/02, 405/06*

U.S. Cl. 260—268 C **28 Claims**

1. A compound of formula



wherein R_1 and R_2, independently of each other, represent hydrogen or alkyl having 1 to 4 carbon atoms; R_3 represents hydrogen, halogen, alkyl having 1 to 4 carbon atoms, or alkoxy having 1 to 4 carbon atoms; R_4 and R_5 independently of each other, represent hydrogen or alkyl having 1 to 4 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

3,962,250

OXIDATION PRODUCTS OF COBALT COMPLEXES, PROCESS FOR OBTAINING SAME AND INSERTION PROCESS

Carlo Neri, and Emilio Perrotti, both of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Division of Ser. No. 102,977, Dec. 30, 1970, Pat. No. 3,803,192. This application Apr. 8, 1974, Ser. No. 459,125

Claims priority, application Italy, Dec. 30, 1969, 26424/69

Int. Cl.² C07F *00/00;* **C07D** *213/02, 215/02*

U.S. Cl. 260—270 D **3 Claims**

1. A process for the preparation of tetradentate complexes of trivalent cobalt having the formula: CO^{III} $(L_1L_2L_3L_4)$ CR_1R_2O. $CR_1R_2OH.B$ wherein $(L_1L_2L_3L_4)$ is a planar tetradentate ligand selected from bis-(diacetylmonooximenimino)-propane, bis-(salicylaldehyde)-ethylenediamine and bis-(acetylacetone)-ethylenediamine; CR_1R_2O is an alcohol group selected from CH_3O, CL CH_2 CH_2O, OCH_2O and CH_2—CH—CH_2O; CR_1R_2 OH is the corresponding alcohol; and B is a heterocylic aromatic base selected from pyridine and quinoline which consists of reacting a mixture of cobalt complex $Co(L_1L_2L_3L_4)$, alcohol CR_1R_2OH and heterocyclic amine base B with molecular oxygen at a temperature of from 0° to 70° C.

3,962,251
PREPARATION OF FLAVANTHRONE PIGMENT

William E. Bachmann, North Haledon, and Thomas R. Flatt, Ridgewood, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 507,830, Sept. 20, 1974, abandoned, which is a division of Ser. No. 370,241, June 15, 1973, Pat. No. 3,898,233. This application Apr. 24, 1975, Ser. No. 571,164
Int. Cl.² C09B 5/22
U.S. Cl. 260—273 1 Claim

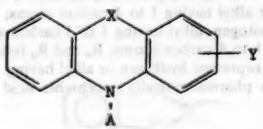
1. A process for producing a polymorphic crystalline reddish yellow flavanthrone pigment which exhibits an X-ray diffraction pattern wherein the only prominent peak between 7.00 and 8.00 dA occurs between 7.14 and 7.20 dA, and wherein the only prominent peaks between 3.30 and 3.75 occur between 3.39 and 3.42 dA and between 3.63 and 3.67 dA which comprises treating crude flavanthrone with concentrated nitric acid in an amount between 3 and 10 parts by weight based on the flavanthrone by agitating and maintaining the temperature of the flavanthrone-acid mixture between room temperature and 80°C for about 1 to 3 hours, thereafter drowning the acid mass with water and recovering the flavanthrone so treated.

3,962,252
10-IMIDOYLACRIDANS

Yao Hua Wu, and Walter G. Lobeck, Jr., both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Division of Ser. No. 336,671, Feb. 28, 1973, Pat. No. 3,888,852. This application Mar. 24, 1975, Ser. No. 561,462
Int. Cl.² C07D 219/14, 401/04
U.S. Cl. 260—279 R 7 Claims

1. A compound selected from the group consisting of 10-imidoylacridans having the formula



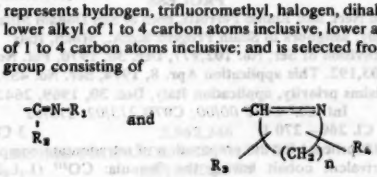
and a non-toxic pharmaceutically acceptable acid addition salt thereof wherein

X represents a divalent methylene radical of the formula $-C(Z_1Z_2)-$

wherein

Z_1 and Z_2 are independently selected from hydrogen or straight chain lower alkyl of from 1 to 4 carbon atoms inclusive;

Y represents hydrogen, trifluoromethyl, halogen, dihalogen, lower alkyl of 1 to 4 carbon atoms inclusive, lower alkoxy of 1 to 4 carbon atoms inclusive; and is selected from the group consisting of



wherein

R_1 is lower alkyl of 1 to 4 carbon atoms inclusive or cycloalkyl of 3 to 6 carbon atoms inclusive;

R_2 is hydrogen or lower alkyl of 1 to 4 carbon atoms inclusive;

R_3 and R_4 are independent members selected from the group consisting of hydrogen or lower alkyl of 1 to 4 carbon atoms inclusive;

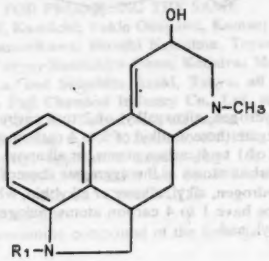
n is an integer of 3 to 5.

3,962,253
OXIDATION OF SELECTIVELY PROTECTED 2,3-DIHYDRO-6-METHYL-8-HYDROXY-9-ERGOLENES

Edmund C. Kornfeld, and Nicholas J. Bach, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 13, 1974, Ser. No. 532,332
Int. Cl.² C07D 457/10
U.S. Cl. 260—285.5 5 Claims

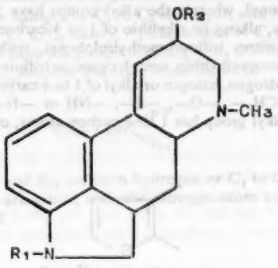
1. A compound of the formula



wherein:

R_1 is a halogenated acetyl group selected from the group consisting of chloroacetyl, bromoacetyl, iodoacetyl, dichloroacetyl, dibromoacetyl, and diiodoacetyl.

3. A compound of the formula



wherein:

R_1 is a halogenated acetyl group selected from the group consisting of chloroacetyl, bromoacetyl, iodoacetyl, dichloroacetyl, dibromoacetyl, and diiodoacetyl; and

R_2 is C_1-C_4 alkanoyl.

5. The process for converting 2,3-dihydro-6-methyl-8-hydroxy-9-ergolene to 6-methyl-8-hydroxy-9-ergolene comprising the steps of

A. selectively reacting 2,3-dihydro-6-methyl-8-hydroxy-9-ergolene with chloroacetic anhydride to obtain 1-chloroacetyl-2,3-dihydro-6-methyl-8-hydroxy-9-ergolene;

B. reacting 1-chloroacetyl-2,3-dihydro-6-methyl-8-hydroxy-9-ergolene with a C_1-C_4 alkanoyl acylating agent to obtain a 1-chloroacetyl-2,3-dihydro-6-methyl-8-(C_1-C_4 alkanoyloxy)-9-ergolene;

C. selectively hydrolyzing said 1-chloroacetyl-2,3-dihydro-6-methyl-8-(C_1-C_4-alkanoyloxy)-9-ergolene with thiourea to obtain 2,3-dihydro-6-methyl-8-(C_1-C_4-alkanoyloxy)-9 -ergolene;

D. oxidizing the 2,3-dihydro-6-methyl-8-(C_1-C_4-alkanoyloxy)-9-ergolene thus formed with manganese dioxide to yield a 6-methyl-8-(C_1-C_4-alkanoyloxy)-9-ergolene; and

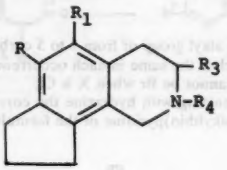
E. hydrolyzing said 6-methyl-8-(C_1-C_4-alkanoyloxy)-9-ergolene with an alkali metal hydroxide to obtain 6-methyl-8-hydroxy-9-ergolene.

3,962,254
N-SUBSTITUTED-5,6-DIHYDROXYCYCLOPENTANO,h]-1,2,3,4-TETRAHYDROISOQUINOLINES AND ETHERS AND ESTERS THEREOF

Ian William Mathison; William Ebenezer Solomons, both of Memphis, Tenn., and Raymond Henry Jones, Northport, N.Y., assignors to Marion Laboratories, Inc., Kansas City, Mo.

Filed Mar. 28, 1974, Ser. No. 455,671
Int. Cl.² C07D *217/16, 217/18*
U.S. Cl. 260—287 CF **24 Claims**

1. A compound of the formula



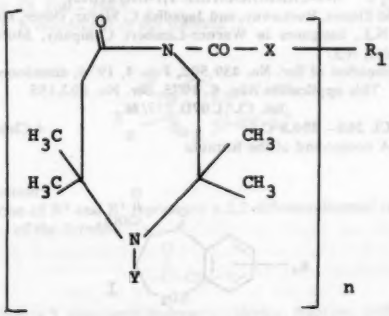
wherein R and R_1 represent hydroxy, alkoxy groups having 1 to 8 carbon atoms, alkanoyloxy groups having 1 to 8 carbon atoms, or phenyl-lower alkanoyloxy groups, R_3 represents hydrogen, a normal alkyl having 1 to 8 carbon atoms, isopropyl, sec-butyl or isopentyl, and R_4 represents alkyl having 1 to 8 carbon atoms, phenyl-carbonyl, phenyl-alkyl, benzyhydryl-alkyl, alkanoyl, phenyl-alkanoyl, benzhydryl-alkanoyl or benzhydrylcarbonyl groups in which groups represented by R_4 the alkyl and alkanoyl groups have 1 to 8 carbon atoms, and nontoxic acid addition salts thereof.

3,962,255
1,4-DIAZAEPINE-5-ONES

Alexander Michael Chalmers, Cheadle, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 26, 1974, Ser. No. 492,087
Claims priority, application United Kingdom, July 31, 1973, 36340/73
Int. Cl.² C07D *243/06*
U.S. Cl. 260—239.3 R **11 Claims**

1. A compound having the formula:



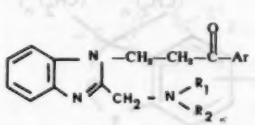
wherein *n* is 1 or 2, X is O or NH, Y is O, hydrogen or a branched or straight-chain alkyl having from 1 to 4 carbon atoms and R_1 is a hydrocarbyl having from 1 to 20 carbon atoms which is selected, when *n* is 1 from the group consisting of a branched- or straight-chain alkyl having from 1 to 20 carbon atoms, a branched- or straight-chain alkenyl having from 3 to 18 carbon atoms, an unsubstituted cycloalkyl having from 5 to 14 carbon atoms or said cycloalkyl substituted with an alkyl of 1 to 8 carbons unsubstituted aryl selected from phenyl and naphthyl or said aryl substituted with chloro, methoxy or phenyl, an alkaryl having from 7 to 18 carbon atoms said alkyl substituent having 1 to 12 carbons, and when n is 2, from the group consisting of a branched- or straight-chain alkylene having 2 to 20 carbon atoms, an alkenylene having 4 to 20 carbon atoms, an unsubstituted cycloalkylene having from 5 to 12 carbon atoms, a substituted or unsubstituted arylene having from 6 to 12 carbon atoms, or an alkarylene having from 7 to 8 carbon atoms, said aromatic substituents being halogen or lower alkoxy groups; and salts thereof said salts being in the form of a phosphate, carbonate, sulphate, chloride, acetate, stearate, maleate, citrate, tartrate, oxalate, benzoate or carbamate.

3,962,256
2-AMINOMETHYL BENZIMIDAZOLE DERIVATIVES

Claude P. Fauran, Paris; Jeannine A. Eberlé, Chatou; Guy M. Raynaud, and Nicole A. M. Dorme, both of Paris, all of France, assignors to Delalande S.A., Courbevoie, France

Filed June 20, 1974, Ser. No. 481,273
Claims priority, application France, July 3, 1973, 73.24388
Int. Cl.² C07D *401/06*
U.S. Cl. 260—293.6 **7 Claims**

1. A compound having the formula



wherein Ar is phenyl or phenyl substituted by one halogen, or one or two alkyl having 1 to 4 carbon atoms, or one, two or three alkoxy having 1 to 4 carbon atoms, and R_1 and R_2 each is alkyl having one to 4 carbon atoms or

is piperidino, pyrrolidino, morpholino or hexamethyleneimino, and the pharmacologically acceptable acid addition salts thereof.

3,962,257
3-PHENACYLPIPERIDINES

Richard P. Pioch, and Klaus K. Schmiegel, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 31, 1974, Ser. No. 475,219
Int. Cl.² C07D *211/32*
U.S. Cl. 260—293.8 **6 Claims**

1. A compound selected from the group consisting of 1-methyl-3-(4-fluorophenacyl)piperidine, 1-methyl-3-(3-fluorophenacyl)piperidine, 1-methyl-3-[4-(trifluoromethyl)-phenacyl]piperidine, 1-methyl-3-[3-(trifluoromethyl)-phenacyl]piperidine, 1-methyl-3-(3,4-dichlorophenacyl)-piperidine, and the pharmaceutically-acceptable acid addition salts thereof.

3,962,258
1,2,3,4,6,7,12,12b-OCTAHYDRO-2-BENZAMIDOINDOLO[2,3-a]QUINOLIZINE

John Leheup Archibald, Windsor; John Lambert Jackson, Henley-on-Thames, and Brian John Bushell, Southampton, all of England, assignors to John Wyeth & Brother Limited, Taplow, England

Filed May 17, 1974, Ser. No. 470,765
Claims priority, application United Kingdom, May 25, 1973, 25299/73
Int. Cl.² C07D 401/06
U.S. Cl. 260—293.53 1 Claim

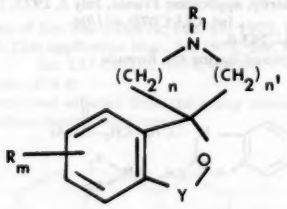
1. 1,2,3,4,6,7,12,12b-octahydro-2-benzamido-indolo[2,3-a]quinolizine or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof.

3,962,259
1,3-DIHYDROSPIRO[ISOBENZOFURAN]S AND DERIVATIVES THEREOF

Victor J. Bauer, Somerville, and Raymond W. Kosley, Jr., Convent, both of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed Dec. 12, 1973, Ser. No. 424,080
Int. Cl.² C07D 491/10
U.S. Cl. 260—293.58 6 Claims

1. Process for the preparation of a compound of the formula



in which

R is hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, trifluoromethyl, halogen, hydroxy or methylenedioxy;

R_1 is alkyl of 1 to 6 carbon atoms, cycloalkylalkyl of 4 to 8 carbon atoms, alkenyl of 3 to 6 carbon atoms, phenylalkyl of the formula $CH_2(CH_2)_nPhR$, diphenylalkyl of the formula $(CH_2)_nCH(PhR)_2$, diphenylmethoxyalkyl of the formula $(CH_2)_nOCHPh_2$, alkanoyl of 2 to 6 carbon atoms, phenylalkanoyl of the formula $CO(CH_2)_nPhR$, benzoylalkyl of the formula $(CH_2)_nCOPhR$, phenylhydroxyalkyl of the formula $(CH_2)_nCHOHPhR$ or cycloalkylcarbonyl of 4 to 8 carbon atoms;

Y is CH_2 C=O;

Ph is phenyl;

m is 1 or 2; and

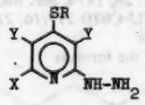
n and *n'* are integers from 1 to 3, the sum of *n* and *n'* being from 3 to 5; and the pharmaceutically acceptable acid addition salts thereof, which comprises reacting an o-halobenzoyl chloride with 2-amino-2-methyl-1-propanol to form the corresponding o-halo-N-(1-hydroxy-2-methyl-2-propyl)benzamide, cyclizing said benzamide to the corresponding o-halophenyloxazoline by treatment with a dehydrating agent, converting said oxazoline to a Grignard reagent by reaction with magnesium, reacting said Grignard reagent with a cycloazalkanone to prepare the corresponding hydroxy-oxazolinylphenylcycloazalkane, and reacting said azalkane with an acid to form the corresponding 1,3-dihydrospiro[isobenzofuran-cycloazalkane]-3-one.

3,962,260
6-HYDRAZINO-2,3,5-TRIHALO-4-ALKYLTHIO PYRIDINES AND METHOD OF PREPARING SAME

Sven H. Ruetman, Walnut Creek, and Richard N. Watson, Antioch, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

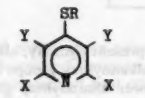
Division of Ser. No. 536,790, Dec. 27, 1974. This application July 31, 1975, Ser. No. 600,674
Int. Cl.² C07D 213/62
U.S. Cl. 260—294.8 F 6 Claims

1. A process for preparing a hydrazino-trihaloalkylthiopyridine of the formula



wherein R is an alkyl group of from 1 to 5 carbons; X is Cl or Br; and Y, which is the same in each occurrence, is Cl or Br, except that Y cannot be Br when X is Cl;

comprising reacting with hydrazine the corresponding tetrahalo-4-(alkylthio)pyridine of the formula



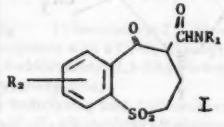
wherein R, X and Y are as above defined, thereby effecting replacement of one X in said tetrahalo-4-(alkylthio)pyridine with an —NH—NH_2 moiety.

3,962,261
2,3,4,5-TETRA HYDRO-5-OXO-1-BENZOTHIEPI N-4-CARBOXAMIDE 1,1-DIOXIDES

Harold Zinnes, Rockaway, and Jagadish C. Sircar, Dover, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 439,502, Feb. 4, 1974, abandoned. This application Aug. 6, 1975, Ser. No. 602,155
Int. Cl.² C07D 213/34
U.S. Cl. 260—294.8 C 4 Claims

1. A compound of the formula



wherein R_1 is aryl of 6–10 carbon atoms, pyridyl, or thiazole and R_2 is hydrogen, lower alkyl, halogen, lower alkoxy or trifluoromethyl and the corresponding alkali metal salts.

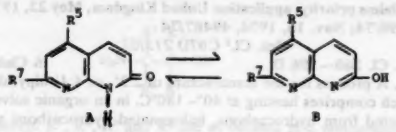
3,962,262

1,8-NAPHTHYRIDINE COMPOUNDS

Haydn Windsor Richard Williams, Dollard-des-Ormeaux, and Clarence Stanley Rooney, Beaconsfield, both of Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 350,285, April 11, 1973, Pat. No. 3,843,663. This application June 7, 1974, Ser. No. 477,392
The portion of the term of this patent subsequent to Oct. 15, 1991, has been disclaimed.
Int. Cl.² C07D *213/44, 471/14*
U.S. Cl. 260—294.8 C 8 Claims

1. A 1,8-naphthyridine having one of the structures A or B



wherein R^5 is selected from the group consisting of lower alkyl, trifluoromethyl, pentafluoroethyl, phenyl, pyridyl, thienyl, and naphthyl; R^7 is selected from the group consisting of lower alkyl, trifluoromethyl and pentafluoroethyl, and at least one of the variable radicals R^5 or R^7 is trifluoromethyl or pentafluoroethyl.

3,962,263

N-(2,2-DIFLUOROALKANOYL)-2,3-PYRIDINEDIAMINE COMPOUNDS

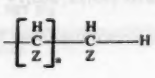
George O. P. Doherty, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 21,536, March 20, 1970, which is a continuation-in-part of Ser. No. 822,042, May 5, 1969. This application Dec. 9, 1971, Ser. No. 206,492
Int. Cl.² C07D *213/75*
U.S. Cl. 260—294.9 7 Claims

1. A compound of the formula

wherein
one of R^0 and R^1 represents a 2,2-difluoroalkanoyl radical of the formula

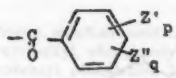
wherein Y represents hydrogen, chlorine, fluorine, perfluoroalkyl of C_1–C_6, or radical of the formula



wherein each Z independently represents hydrogen or halogen and *n* represents 0 or 1;
the other of R^0 and R^1 represents hydrogen,

wherein Y is as defined above,
alkanoyl of C_1–C_6,
loweralkenoyl of C_3–C_4,
loweralkanoyl of C_3–C_4,
halogenated loweralkanoyl of C_2–C_4 bearing on any position or positions one or more halogen atoms, each independently selected, subject to the limitation that the alpha position bear at least one substituent moiety selected from the group consisting of hydrogen and halogen of atomic weight from 35 to 127, both inclusive,
radical of the formula

wherein Y′ represents loweralkyl of C_1–C_4 or phenyl,
benzoyl,
furoyl,
naphthoyl, or
substituted benzoyl of the formula



wherein each Z′ independently represents halo or nitro, Z″ represents loweralkyl of C_1–C_4 or loweralkoxy of C_1–C_4, *p* represents 1 or 2, *q* represents 0 or 1, and the sum of *p* and *q* is 1 or 2;
R^2 represents halogen, nitro, $-CF_3$, $-CF_2Cl$, $-CF_2H$, cyano, or loweralkylsulfonyl of C_1–C_4;
R^3 represents halogen;
and *m* represents an integer of from 0 to 2, both inclusive, subject to the limitation that when R^2 represents a moiety other than halogen, *m* is no greater than 1; or an acid addition salt thereof.

3,962,264

PROCESS FOR MAKING 2-AMINO NICOTINONITRILE

Marwan J. Abu El-Haj, Gales Ferry, and Beryl William Dominy, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 292,645, Sept. 27, 1972, Pat. No. 3,862,191. This application Sept. 23, 1974, Ser. No. 508,060
Int. Cl.² C07D *213/84*
U.S. Cl. 260—294.9 3 Claims

1. The process for preparing 2-aminonicotinonitrile, which process comprises:
1. reacting equimolar proportions of a 1,1,3,3-tetraalkoxypropane wherein said alkoxy group contains from 1 to 4 carbon atoms with malononitrile in the presence of at least three molar equivalents of an alkanoic acid anhy-

dride wherein said alkanonic acid contains from 2 to 4 carbon atoms at 30°–200°C. and

2. thereafter, reacting the intermediate 1-alkoxy-4,4-dicyano-1,3-butadiene product with equimolar proportions of ammonia at 25°–100°C. in a reaction inert solvent.

3,962,265
H'-(4-((6-CHLORO-2-PYRIDINYL)OXY)PHENYL)-N-METHYL-N-(1-METHYL-2-PROPYNYL)UREA

Howard Johnston, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 435,619, Jan. 22, 1974, abandoned. This application Apr. 21, 1975, Ser. No. 570,067

Int. Cl.² C07D *213/86*

U.S. Cl. 260—295 E **1 Claim**

1. The compound which is N'-(4-((6-chloro-2-pyridinyl)oxy)phenyl)-N-methyl-N-(1-methyl-2-propynyl)urea.

3,962,266
NOVEL SUBSTITUTED BENZOPYRANOPYRIDINE

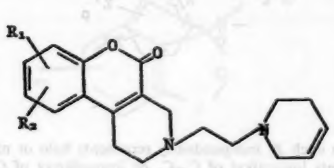
Richard E. Brown, East Hanover; Chester Puchalski, Dover, and John Shavel, Jr., Mendham, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 534,502, Dec. 19, 1974, which is a continuation-in-part of Ser. No. 343,613, March 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 122,498, March 9, 1971, abandoned. This application May 1, 1975, Ser. No. 573,668

Int. Cl.² C07D *519/00*

U.S. Cl. 260—295 T **2 Claims**

1. A substituted benzopyranopyridine of the formula;



I

wherein R_1 and R_2 may be hydrogen, hydroxy, lower alkoxy, or lower alkyl of 1 to 6 carbon atoms or taken together from a methylenedioxy group.

3,962,267
DENTAL CEMENT COMPOSITION

Narishige Suzuki, Kyoto; Yoshihiro Morino, Otsu; Yoshitaka Hashiguchi, Amagasaki, and Tunehiro Segawa, Sakai, all of Japan, assignors to Shofu Dental Corporation, Kyoto and Teikoku Chemical Industry Co., Ltd., Osaka, both of, Japan

Filed July 11, 1974, Ser. No. 487,486

Claims priority, application Japan, Apr. 16, 1974, 49-43179

Int. Cl.² C08K *3/22*

U.S. Cl. 260—29.6 TA **8 Claims**

1. A dental cement composition comprising:

A. an aqueous solution of a resin prepared by copolymerizing:

1. about 5 to 60 parts by weight of 3-butene-1,2,3-tricarboxylic acid,
2. about 40 to 95 parts by weight of an α,β-olefinically unsaturated monocarboxylic acid, and
3. about 0 to 15 parts by weight of an additional polymerizable monomer,

said copolymer having a molecular weight between about 5,000 and 250,000, said aqueous solution containing at least about 40% resin solids; and

B. a metal oxide,

C. the ratio of the copolymer to the metal oxide being about 1:1 to about 1:4.

3,962,268
PROCESS FOR PRODUCING 2:2'- OR 4:4'-BIPYRIDYLS

George Henry Lang, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 2, 1975, Ser. No. 574,089

Claims priority, application United Kingdom, May 22, 1974, 22890/74; Nov. 15, 1974, 49487/74

Int. Cl.² C07D *213/02*

U.S. Cl. 260—296 D **6 Claims**

1. A process for the manufacture of 2:2'- or 4:4'-bipyridyls which comprises heating at 40°– 180°C. in an organic solvent selected from hydrocarbons, halogenated hydrocarbons and ethers a 2- or 4-(halo-magnesium)-pyridine respectively with from 1 to 4 moles of the halide of an element from groups 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, 4a and 5a of the Periodic table.

3,962,269
1,3-PROPANDIOL INTERMEDIATES

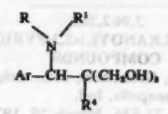
Richard N. Booher, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 427,944, Dec. 26, 1973, which is a continuation-in-part of Ser. No. 313,221, Dec. 8, 1972, abandoned. This application May 8, 1975, Ser. No. 575,561

Int. Cl.² C07D *213/38*

U.S. Cl. 260—296 R **4 Claims**

1. A compound of the formula



wherein

R and R^1 are C_1-C_4 alkyl, C_1-C_4 alkenyl or benzyl; or when taken together with the nitrogen atom to which they are attached are aziridino, pyrrolidino or piperidino;

R^4 is hydrogen or methyl; and

Ar is phenyl, halophenyl, hydroxyphenyl, methoxyphenyl, methylphenyl, trifluoromethylphenyl or 3-pyridyl.

3,962,270
PROCESS FOR PREPARING 2-VINYL OXAZOLINES

Dieter Arlt, Cologne-Buchheim, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

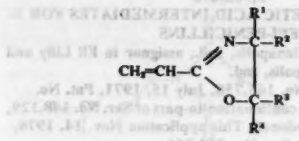
Filed May 21, 1974, Ser. No. 472,016

Claims priority, application Germany, June 9, 1973, 2329545

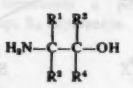
Int. Cl.² C07D *263/12, 263/14*

U.S. Cl. 260—307 F **3 Claims**

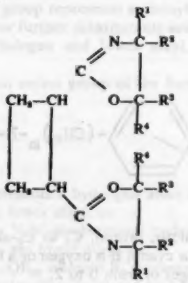
1. Process for preparing 2-vinyl oxazolines having the formula



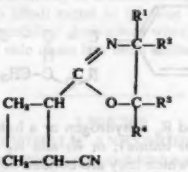
wherein R^1, R^2, R^3 and R^4, which may be the same or different, each represents hydrogen, alkyl with up to 4 carbon atoms, hydroxy substituted alkyl with up to 4 carbon atoms, phenyl and phenyl substituted by alkyl with 1 to 2 carbon atoms which comprises the steps of reacting in a first stage cyclobutane-1,2-dinitrile with an aminoethanol having the formula:



wherein R^1, R^2, R^3 and R^4 are as defined at a temperature of from 90° to 180°C and, in a second stage, heating the resulting 1,2-bis-oxazolin-2-yl cyclobutane having the formula:



and/or 2-oxazolin-2-yl cyclobutane nitrile having the formula:



wherein R^1, R^2, R^3 and R^4 are defined above to a temperature of from 250° to 600°C.

2. Process of claim 1 wherein the first stage is catalyzed by a metal salt whose cation is selected from the group of lithium, copper, calcium, zinc, cadmium, manganese, nickel and cobalt.

3,962,271

MONOCYCLIC POLYOXYMETHYLENEOXAZOLIDINES AND BIOCIDAL COMPOSITIONS CONTAINING SAME

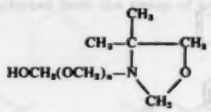
Henri Sidi, Paramus, and Hilding R. Johnson, Wayne, both of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Division of Ser. No. 447,797, March 4, 1974, Pat. No. 3,890,264. This application Oct. 31, 1974, Ser. No. 519,884

Int. Cl.² C07D 263/06

U.S. Cl. 260—307 FA **4 Claims**

1. A monocyclic polyoxymethyleneoxazolidine having the structural formula



wherein n represents a number in the range of 1 to 4.

3,962,272

1H-TETRAZOLE-1-ACETATE ESTERS AND ACIDS AND PROCESS THEREFOR

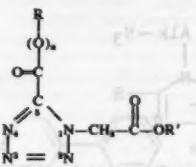
Allen S. Katner, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 280,625, Aug. 14, 1972, abandoned. This application Aug. 5, 1974, Ser. No. 494,599

Int. Cl.² C07D 257/04

U.S. Cl. 260—308 D **11 Claims**

1. A compound of the formula



in which R' is hydrogen, an alkali metal cation, C_1— to C_4—alkyl, C_3— to C_8-cycloalkyl, phenyl, tolyl, xylyl, benzyl, p-nitrophenyl, p-nitrobenzyl, phenylethyl, 2,2,2-trichloroethyl, or phenacyl; R is C_1— to C_4-alkyl C_3— to C_8-cycloalkyl, phenyl, naphthyl, tolyl, benzyl, p-nitrobenzyl, or an alkali metal cation; and n is zero or one; subject to the limitation that, when n is zero, R is other than an akali metal cation.

3,962,273

NOVEL METHOD FOR THE SYNTHESIS OF 4-THIO AND 4-SELENO ETHERS OF 2-PYRAZOLIN-5-ONES

Delwyn E. Machiele, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,687

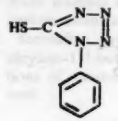
Int. Cl.² C09D 231/08; C07D 257/06

U.S. Cl. 260—308 D **16 Claims**

1. A process for obtaining a 4-thio- or a 4-seleno ether derivative of a 2-pyrazolin-5-one compound comprising reacting in reactive proportions in an inert organic reaction solvent and under mild reaction conditions a 4,4-dibromo-2-pyrazolin-5-one with a compound of the formula

wherein R^4 is defined as —S— or —Se—; and R^3 is defined as a heterocyclic group having 5–6 atoms in a heteronucleus containing at least one sulfur, nitrogen, or oxygen atom; an aryl group; or an alkyl group, whereby said 4-thio- or 4-seleno-ether derivative of said 2-pyrazolin-5-one compound is produced.

11. A process for obtaining 1-(2,4,6-trichlorophenyl)-3-(2,4-dichloroanilino)-4-(1-phenyl tetrazolylthio)-5-pyrazolone comprising contacting (a) 1-(2,4,6-trichlorophenyl)-3-(2,4-dichlorophenylanilino)-4,4-dibromo-5-pyrazolone with (b) a compound of the formula



in a weight ration of (a) to (b) respectively of from about 1:1 to about 1:5 in an acetonitrile reaction solvent, and recovering the resulting thioether product.

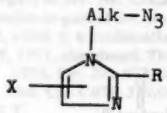
3,962,274

1-AZIDOALKYLIMIDAZOLES

Ernest F. Levon, Evanston, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Aug. 11, 1975, Ser. No. 603,336
Int. Cl.² C07D 403/06
U.S. Cl. 260—309 10 Claims

1. A compound of the formula



wherein R represents hydrogen, alkyl containing fewer than 8 carbons, phenyl, or halophenyl; Alk represents alkylene containing more than 1 and fewer than 5 carbons; and X represents hydrogen or nitro.

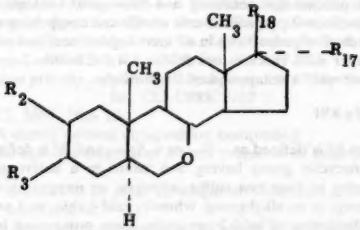
3,962,275

7-OXA STEROIDS

Robert William Guthrie, Fairfield; Richard Wightman Kierstead, and Ronald Andrew Lemahieu, both of North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 259,526, June 5, 1972, Pat. No. 3,869,467. This application Dec. 11, 1974, Ser. No. 531,494
Int. Cl.² C07D 493/02
U.S. Cl. 260—310 C 2 Claims

1. A compound of the formula:



wherein R_2 and R_3 are taken togther to form a pyrazole ring; R_{18} is hydroxy or hydroxy esterified with a lower alkanoic acid or a halo lower alkanoic acid, with said alkanoic acid containing from 2 to 7 carbon atoms.

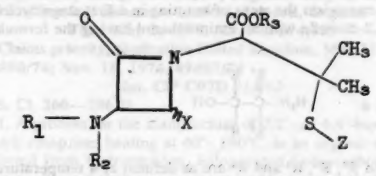
3,962,276

AZETIDINONE ACETIC ACID INTERMEDIATES FOR 5-EPI-PENICILLINS

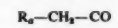
Stjepan Kukolja, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 165,758, July 15, 1971, Pat. No. 3,897,445, which is a continuation-in-part of Ser. No. 148,129, May 28, 1971, abandoned. This application Nov. 14, 1974, Ser. No. 523,766
Int. Cl.² C07D 403/04, 205/08
U.S. Cl. 260—326 S 5 Claims

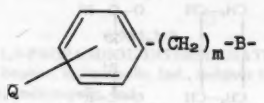
1. A compound of the formula



wherein R_1, taken alone, denotes an acyl group of the formula

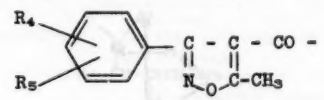


where R_a is



Q is hydrogen, chloro, bromo, C_1 to C_3-alkyl, C_1 to C_3-alkyloxy, nitro, or cyano; B is oxygen or a chemical bond; and *m* is an integer of from 0 to 2;

R_a, taken alone, is defined as R_1 above, or is



where each of R_4 and R_5 is hydrogen or a halogen (fluorine, chlorine, bromine, or iodine); or R_1 and R_2 taken together with the nitrogen to which they are bonded complete a cyclic imide radical derived from a hydrocarbon dibasic acid having from 3 to 20 carbon atoms, and R_3 is hydrogen, C_1 to C_4 alkyl, p-nitrobenzyl, p-methoxybenzyl, benzyl, benzyhydryl, phthalimidomethyl, succinimidomethyl, 2,2,2-trichloroethyl, trimethylsilyl, phenacyl, or p-halophenacyl in which halo denotes chlorine or bromine, X is chlorine or bromine and Z is hydrogen or —SCN.

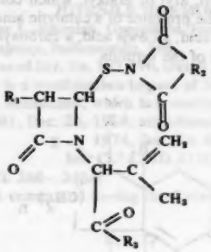
3,962,277

ACETIDINE DERIVATIVES

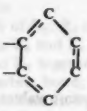
Jan Verwey, Leiden, and Hong Sheng Tan, Bleiswijk, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Division of Ser. No. 440,725, Feb. 8, 1974. This application Oct. 6, 1975, Ser. No. 619,843
Claims priority, application United Kingdom, Feb. 9, 1973, 6576/73
Int. Cl.² C07D 209/34
U.S. Cl. 260—326 S 23 Claims

1. Azetidine derivatives of the formula



wherein R_1 represents a penicillin- or cephalosporin acylamido group, R_2 represents:



and when said group represents a phenylene - this group may carry one to four further substitutents selected from the group consisting of halogen and lower alkyl, lower alkenyl and phenyl

R_3 represents an amino group of the formula

wherein R_7 represents a hydrogen atom or a lower alkyl and R_8 represents a lower alkyl, or

R_3 represents a N,N'-disubstituted hydrazino group wherein the substituents are lower alkyl, or

R_3 represents $-OR_9$, wherein R_9 represents a hydrogen atom, a lower alkyl optionally substituted by 1 to 3 halogen atoms or by 1 or 2 phenyl groups, wherein the phenyl groups may be substituted by a methoxy or a nitro, or R_9 represents a phenacyl group or an alkali metal or alkaline earth metal ion and corresponding azetidine derivatives wherein the double bond in the propenyl side chain has been shifted from the 2- to the 1-position.

3,962,278

N,N'BIS(PHTHALIC ANHYDRIDE) DIIMIDES

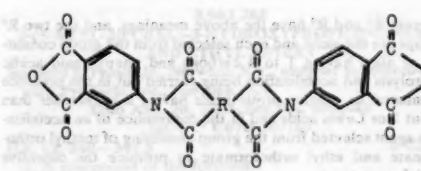
George M. Bower, Pittsburgh, and Richard M. Skena, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 97,334, Dec. 11, 1970, abandoned. This application Nov. 5, 1973, Ser. No. 413,073

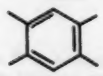
Int. Cl.² C07D *405/14, 471/06, 487/04, 487/14*

U.S. Cl. 260—326 C **5 Claims**

1. A dianhydride monomer containing imide linkages and having the structural formula:



wherein R is selected from the group of tetravalent radicals consisting of:



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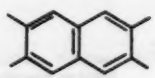

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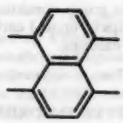

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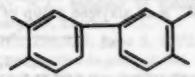

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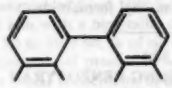

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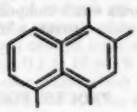

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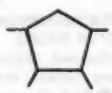

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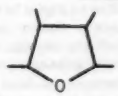

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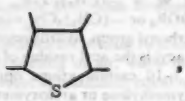

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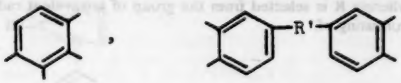
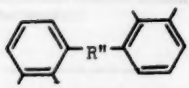


and



wherein R' is a radical selected from the group consisting of carbonyl, sulfonyl, oxy and alkylene groups of up to 3 carbons and R'' is an alkylene group of up to 3 carbons.

3,962,279

SYNTHESIS OF PERFLUOROPYRUVYL FLUORIDE DIMER

David Charles England, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed June 6, 1975, Ser. No. 584,381
Int. Cl.² C07D 317/32
U.S. Cl. 260—340.2 4 Claims

1. The process of synthesizing the dimer of perfluoropyruvyl fluoride which comprises reacting liquid or gaseous hexafluoropropene epoxide with liquid dimethyl formamide.

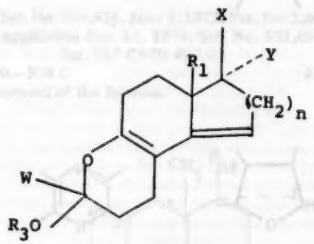
3,962,280

PROCESS FOR PREPARING BENZOPYRAN DERIVATIVES

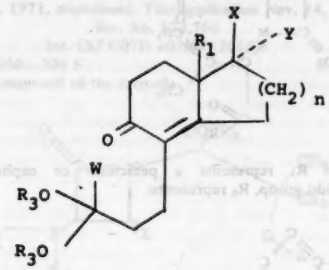
Ulrich Eder; Gerhard Sauer; Gregor Haffer; Jurgen Ruppert, and Rudolf Wiechert, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

Filed June 6, 1973, Ser. No. 367,509
Claims priority, application Germany, June 8, 1972, 2228473; June 8, 1972, 2228475
Int. Cl.² C07D 311/78
U.S. Cl. 260—340.5 7 Claims

1. A process for the production of a benzopyran of the formula



wherein R_1 and R_3 each are lower alkyl; n is the integer 1 or 2; X is hydroxy, acyloxy wherein acyl is the acyl radical of a hydrocarbon carboxylic acid of 1–10 carbon atoms optionally substituted by phenyl, or alkoxy of 1–10 carbon atoms optionally substituted by phenyl and Y is H; or X and Y collectively are =O; and W is $-(CH_2)_3$-Z-R_4, $-(CH_2)_3-CH=C-R_4$, $-CH_2)_3-COOR_4$ or $-(CH_2)_3CN$, wherein V is halogen, Z is a ketalized carbonyl group, hydroxymethylene, acyloxymethylene wherein acyl is the acyl residue of a hydrocarbon carboxylic acid of 1–10 carbon atoms optionally substituted by phenyl, alkoxymethylene or aryloxymethylene of 1–10 carbon atoms in the alkoxy or alkoxy residue, R_4 and R_5 each are lower alkyl and R_6 is alkyl, aryl or aralkyl, which comprises catalytically cyclizing in the presence of a catalytic amount of a mineral acid, a sulfonic acid, a Lewis acid, a carboxylic acid or a phenol, a compound of the formula



wherein R_1, R_3, W, X, Y and n have the same values as the product thus-produced, to form said benzopyran.

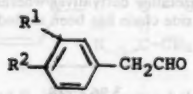
3,962,281

METHOD OF PREPARING ALDEHYDES

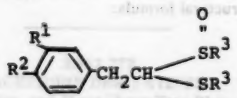
Genichi Tsuchihashi, Tama, and Katsuyuki Ogura, Sagamihara, both of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Division of Ser. No. 245,305, April 19, 1972, Pat. No. 3,845,076. This application Aug. 9, 1974, Ser. No. 496,206
Claims priority, application Japan, Apr. 20, 1971, 46-24910; Apr. 21, 1971, 46-25257; June 2, 1971, 46-37852; Apr. 30, 1971, 46-27998; June 2, 1971, 46-37853
Int. Cl.² C07C 43/30
U.S. Cl. 260—340.5 2 Claims

1. A method of preparing a dimethyl acetal or diethyl acetal of an aldehyde of the formula



wherein R^1 is a member selected from the group consisting of hydrogen and alkoxy having 1 to 4 carbons, R^2 is a member selected from the group consisting of hydrogen, halogen and alkoxy having 1 to 4 carbons, and R^1 and R^2 together represent alkylidenedioxy having 1 to 4 carbons; which comprises the steps of subjecting to an acidic hydrolysis and acetalization a sulfoxide of the formula



wherein R^1 and R^2 have the above meanings, and the two R^3 groups are the same and each selected from the group consisting of alkyl having 1 to 4 carbons and phenyl, said acidic hydrolysis and acetalization being carried out in the presence of mineral or organic protic acids having a pK smaller than about 1 or Lewis acids and in the copresence of an acetalization agent selected from the group consisting of methyl orthoformate and ethyl orthoformate to produce the objective acetal compound.

3,962,282
JUVENILE HORMONE MIMICS

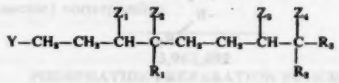
Thomas L. Emmick, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 187,890, Oct. 8, 1971, Pat. No. 3,825,661, which is a continuation-in-part of Ser. No. 877,019, Nov. 14, 1969, abandoned, which is a continuation-in-part of Ser. No. 787,281, Dec. 26, 1968, abandoned. This application July 3, 1974, Ser. No. 485,486

Int. Cl.² C07D 317/50, 319/08

U.S. Cl. 260—340.5 3 Claims

1. A compound having the formula



wherein

each of R_1, R_2 and R_3 is a C_1–C_3 alkyl group: [each of Z_1, Z_2, Z_3 and Z_4 separately is hydrogen or halogen, or]

Z and Z_2 together and Z_3 and Z_4 together are a carbon to carbon bond; and

Y is substituted phenyl wherein the substituents are methylenedioxy or ethylenedioxy.

3,962,283
TERPENE FLAVORANT INTERMEDIATES

Erhard Bertele, Dubendorf, and Peter Schudel, Grut near Wetzikon, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

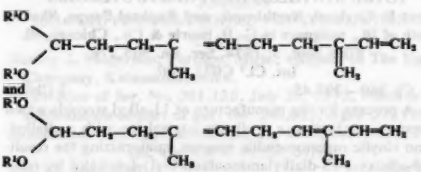
Division of Ser. No. 436,756, Jan. 25, 1974, which is a division of Ser. No. 742,178, July 3, 1968, Pat. No. 3,872,172. This application Oct. 16, 1974, Ser. No. 515,269

Claims priority, application Switzerland, July 7, 1967, 9749/67; Nov. 1, 1967, 15391/67

Int. Cl.² C07C 43/30; C07D 317/12

U.S. Cl. 260—340.9 3 Claims

1. A compound having the formula selected from the group consisting of



and

wherein the symbols R^1 each signify a lower alkyl group or together signify a lower alkylene group.

3,962,284
3-(5-ARYL-2-FURYL)-3-HYDROXYPROPIONIC ACIDS AND ETHYL ESTERS

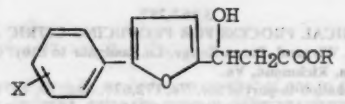
Stanford S. Pelosi, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Aug. 20, 1975, Ser. No. 606,244

Int. Cl.² C07D 307/40

U.S. Cl. 260—347.5 8 Claims

1. A compound of the formula:



wherein X is 4-chloro, 3,4-dichloro, 4-bromo, 3-chloro, 4-fluoro or hydrogen and R is hydrogen or ethyl.

3,962,285
OLEFIN OXIDATION PROCESS

James A. Cusumano, Rahway, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 259,929, June 5, 1972, Pat. No. 3,844,981, which is a continuation-in-part of Ser. No. 887,747, Dec. 23, 1969, abandoned. This application May 22, 1974, Ser. No. 472,170

Int. Cl.² C07D 301/10

U.S. Cl. 260—348.5 R 9 Claims

1. A process for oxidizing ethylene to ethylene oxide which comprises contacting said ethylene, in the presence of oxygen, under oxidation conditions, such oxidation conditions comprising mixing about 20 to 40 wt. % oxygen, about 5 to 20 wt. % ethylene and about 40 to 75 wt. % of an inert gas at a temperature of from 100° to 400°C and a pressure of from 1 to 20 atm with a bimetallic catalyst, said catalyst comprising from 90 to 99.9 wt. % of silver and from 0.1 to 10 wt. % of a promoter metal present as a surface alloy phase which promoter metal is rhenium, at a space velocity of 1000 to 4000 V/V/hr. and thereby converting at least a portion of the ethylene to ethylene oxide.

3,962,286
CATALYTIC PROCESS FOR PREPARING ETHYLENE OXIDE BY OXIDATION OF ETHYLENE

Giambattista Antonelli, Brugherio (Milan); Natale Ferlazzo, Segrate (Milan), and Giancarlo Aglietti, Milan, all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Dec. 17, 1974, Ser. No. 533,603

Claims priority, application Italy, Dec. 28, 1973, 32343/73

Int. Cl.² C07D 301/10

U.S. Cl. 260—348.5 R 17 Claims

1. A method for preparing ethylene oxide by catalytic oxidation of ethylene with oxygen, which comprises contacting a gaseous stream containing ethylene and molecular oxygen with a catalyst obtained by the steps comprising:

a. impregnating particles of a subdivided inert support with a heat-decomposable silver salt,

b. drying said impregnated particles while heating to a maximum temperature not exceeding 160°C,

c. flowing through the dried particles a gaseous stream consisting of superheated steam while raising the temperature to a selected value in the range of from 270°C to 350°C,

d. progressively replacing in the gaseous stream and the steam by air over a period of at least 1 hour, while maintaining the temperature at a value substantially equal to said selected value, and

e. maintaining the particles for at least 30 minutes under the gaseous stream consisting of air, while maintaining the temperature at a value substantially equal to said selected value.

3,962,287

CHEMICAL PROCESS FOR PRODUCING CITRIC ACID

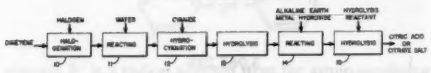
Karl E. Wiegand, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 172,627, Aug. 18, 1971, Pat. No. 3,769,337. This application Mar. 13, 1973, Ser. No. 340,725

The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.

Int. Cl.[2] C07C *59/16*

U.S. Cl. 260—535 P 22 Claims



1. A process for producing citric acid or salts thereof which comprises reacting a 3-carbamoyl-3-hydroxy-4-halobutyrate in an aqueous system with about 1 gram mol of cyanide ion and at least about 1 gram mol of alkaline earth metal hydroxide per gram mol of 3-carbamoyl-3-hydroxy-4-halobutyrate under conditions which form an alkaline earth metal adduct, and subjecting said adduct to hydrolysis under alkaline or acidic conditions to form a citrate.

3,962,288

1-ALKYL-SUBSTITUTED-1,2,3,4-TETRAHYDROANTHRAQUINONES

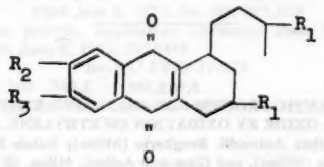
Lawrence G. Vaughan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 264,579, June 20, 1972, abandoned. This application Mar. 14, 1974, Ser. No. 451,116

Int. Cl.[2] C07C *49/68*

U.S. Cl. 260—369 9 Claims

1. An alkyl-substituted-1,2,3,4-tetrahydroanthraquinone of the formula



wherein R_1 is hydrogen or an alkyl group containing 1–10 carbon atoms and R_2 and R_3 are hydrogen or alkyl groups containing 1–6 carbon atoms.

3,962,289

ESTERS OF PGA_2 AND p-TRITYLPHENOL

Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 431,598, Jan. 8, 1974. This application Dec. 12, 1974, Ser. No. 531,993

Int. Cl.[2] C07C *69/74*

U.S. Cl. 260—395 3 Claims

1. The ester of p-tritylphenol and PGA_2.

3,962,290

PROCESS FOR N,N,N',N'-TETRAARYLQUINONE DIIMONIUM SALTS

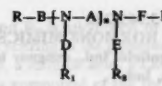
Vincent Gerard Grosso, Piscataway, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 25, 1974, Ser. No. 445,510

Int. Cl.[2] C07C *119/14*

U.S. Cl. 260—396 N 4 Claims

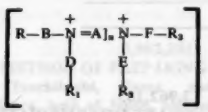
1. A process for oxidizing a diamine compound represented by the formula:



(I)

wherein A, B, D, E and F represent benzene or naphthalene radicals; n is 1 or 2 and R, R_1, R_2 and R_3 represent hydrogen, lower alkyl, lower alkoxy, phenyl, tolyl, acetyl, or

radicals, said R_4 and R_5 in turn representing hydrogen, alkyl of from 1 to 12 carbon atoms, benzyl, naphthylmethyl or trifluoroacetyl radicals; said A, B, D, E and F and R through R_5 which are other than hydrogen being either unsubstituted or substituted with an inert group selected from lower alkyl, lower alkoxy, hydroxy, cyano, carboxy, sulfo and halogen; to produce a diimonium compound represented by the formula



(II)

wherein A represents a benzoquinonoid or naphthoquinonoid radical and, B, D, E and F and R through R_5 have the same meaning as in formula I and X^- represents a hexalfluoroantimonate or hexafluoroarsenate ion; which process commprises conducting the oxidation reaction in an inert organic solvent in the presence of about 2 mole proportions of a cupric salt per mole proportion of said diamine and 2 mole proportions of a soluble hexafloroantimonate or hexafluoroarsenate salt per mole proportion of said cupric salt, said cupric salt being soluble in said solvent.

3,962,291

TOTAL SYNTHESIS OF 11-ALKYL STEROIDS

Robert B. Garland, Northbrook, and Raphael Pappo, Skokie, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Sept. 5, 1974, Ser. No. 503,270

Int. Cl.[2] C07J *1/00*

U.S. Cl. 260—397.45 2 Claims

1. A process for the manufacture of 11-alkyl steroids which comprises contacting a 6-alkoxy-1-tetralone with a dialkylamino vinylic organometallic reagent, quaternizing the resulting 5-alkoxy-1-(3-dialkylaminoalken-1-yl)-1-tetralol by reaction with an alkyl halide and dehydrating the resulting quaternary ammonium salt by reaction with acetic anhydride or, alternatively, dehydrating said 6-alkoxy-1-(3-dialkylaminoalken-1-yl)-1-tetralol by reaction with acetic anhydride, then quaternizing the resulting 6-alkoxy-1-(3-dialkylaminoalken-2-yl)-3,4-dihydronaphthalene with an alkyl halide, contacting the resulting quaternary salt with a 2-alkylcyclopentane-1,3-dione to yield the corresponding 2-(6-alkoxy-3,4-dihydro-1-naphthyl)-1-(2-alkylcyclopentane-1,3-dione2-yl)-2-alkene, cyclizing the latter product by reaction with p-toluene-sulfonic acid, contacting the resulting 3-alkoxy-11alkylene-13-alkylgona-1,3,5(10),8(9),14-pentaen-17-one with lithium aluminum hydride, reacting the resulting 17β-ol with hydrogen in the presence of a palladium-calcium carbonate catalyst to afford the corresponding 3-alkoxy-11,13β-bisalkylgona-1,3,5,(10),9(11), 8(14)-pentaen-17β-ol, contacting the latter product with hydrogen in the presence of palladium on alumina catalyst to yield the corresponding gona-1,3,5(10),8(9)-

tetraene, contacting the latter derivative with sodium in liquid ammonia to yield the corresponding gona-1,3,5(10)triene, contacting the latter product with sodium in liquid ammonia in the presence of aniline to afford the corresponding 2,5(10)-diene, contacting that compound with chromic acid to yield the 17-one corresponding, reacting the latter substance with a 1-alkyne to afford the corresponding 17α-alkynyl-17β-ol, hydrolyzing the latter enol ether with oxalic acid to yield the corresponding 5(10)-en-3-one, contacting that product with dilute hydrochloric acid to afford the corresponding 4-en-3-one, contacting that product with lithium tri-tertiary butoxy aluminum hydride to yield the 3β-ol corresponding and reacting that product with acetic anhydride to yield the 3,17-bis-(alkanoate) corresponding.

3,962,292

PHOSPHATIDE PREPARATION PROCESS

Bernard F. Szuhaj, Lombard, and Joseph R. Yaste, Hoffman Estates, both of Ill., assignors to Central Soya Company, Inc., Fort Wayne, Ind.

Filed July 29, 1974, Ser. No. 492,762
Int. Cl.² C07F 9/10
U.S. Cl. 260—403 1 Claim

1. In a method of modifying a natural phosphatide to develop water dispersability, the steps of:

acylating a vegetable material consisting predominantly of phosphatidic material by mixing said material with a carboxylic acid anhydride containing not more than ten carbon atoms exclusive of any aryl groups and continuing the reaction between said material and anhydride until the free amino nitrogen value of said material is reduced at least about 10% to about 90%,

thereafter hydroxylating the acylated product while the mixture is still at an acid pH from said acylating step and continuing the reaction between said acylated product and the hydroxylating agent until the iodine value of said acylated product is reduced at least about 5% to about 20%,

controlling the acylating and hydroxylating steps to develop a relatively higher reduction in one value when a relatively lower reduction in value results from the other step, and

thereafter substantially neutralizing the acylated, hydroxylated product.

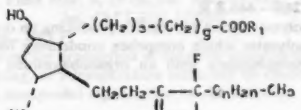
3,962,293

13,14-DIHYDRO-16-FLUORO PROSTAGLANDIN F_1 ANALOGS

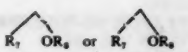
Barney J. Magerlein, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 381,155, July 20, 1973, which is a continuation-in-part of Ser. No. 248,013, April 27, 1972, abandoned. This application Feb. 21, 1975, Ser. No. 551,694
Int. Cl.² C07C 61/38, 69/74
U.S. Cl. 260—408 19 Claims

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein ~ indicates attachment of hydroxyl to the ring in alpha or beta configuration; wherein g is an integer from 2 to 5, inclusive, wherein C_nH_{2n} is alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive, in the chain between —CFR_2— and terminal methyl; wherein M''' is



wherein R_7 and R_8 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different; wherein R_1 is hydrogen or alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; and wherein R_2 is hydrogen, methyl, ethyl, or fluoro; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

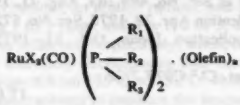
3,962,294

OLEFIN ISOMERIZATION CATALYSTS AND PROCESS

James E. Lyons, Wallingford, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.

Continuation-in-part of Ser. No. 391,895, Aug. 27, 1973, abandoned, which is a division of Ser. No. 251,986, May 10, 1972, Pat. No. 3,855,323, which is a continuation-in-part of Ser. No. 80,750, Oct. 14, 1970, abandoned. This application May 9, 1975, Ser. No. 575,872
Int. Cl.² C07F 15/00
U.S. Cl. 260—429 R 5 Claims

1. A compound having the formula



wherein X is halogen; R_1, R_2, and R_3 are lower alkyl groups having from 1 to 6 carbon atoms, cycloalkyl, or aryl, wherein R_1, R_2, and R_3 may be the same or different; and n is 1; and wherein the olefin is an isomerizable monoolefin having from 4 to 36 carbon atoms or diolefin having from 5 to 40 carbon atoms.

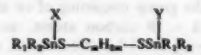
3,962,295

NOVEL DIORGANOTIN DERIVATIVES OF α, ω-DIMERCAPTANS AND METHOD FOR PREPARING SAME

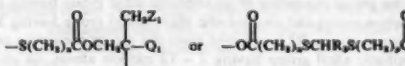
John Desmond Collins, 14 Windsor Road, Albrighton, Shropshire; Harold Coates, 60 Ounsdale Road, Wombourn, Staffordshire, and Iftikhar Hussain Siddiqui, 8 Wadhurst Road, Edgbaston, Birmingham, 13, Warwickshire, all of England

Continuation-in-part of Ser. No. 359,176, May 10, 1973, abandoned. This application Dec. 17, 1974, Ser. No. 533,535
Claims priority, application United Kingdom, May 10, 1972, 21826/72
Int. Cl.² C07F 7/22
U.S. Cl. 260—429.7 16 Claims

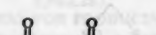
1. An organotin compound of the formula



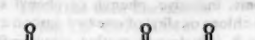
wherein R_1 and R_2 are individually selected from the group consisting of alkyl groups containing between 1 and 20 carbon atoms, cycloalkyl and phenyl groups, m is an integer between 1 and 8, inclusive, at least one of X and Y represents the group



with the proviso that when only one of X and Y represents said group, the other represents —SR_5 or



Q_1 represents an alkyl group containing between 1 and 6 carbon atoms, inclusive, or CH_2Z_3, wherein Z_1, Z_2 and Z_3 are individually selected from the group consisting of



R_3 represents an alkyl group containing between 1 and 20 carbon atoms, inclusive, an alkylphenyl or hydroxyphenyl group, R_4, R_5, R_6, R_7 and R_8 are individually selected from the group consisting of alkyl groups containing between 1 and 20 carbon atoms and n and p are each selected from the group consisting of integers between 1 and 6, inclusive.

3,962,296

PROCESS FOR THE PREPARATION OF STABILIZERS FOR SYNTHETIC RESINS

Tetsuo Chiba; Yoshio Itoh, both of Yokohama, and Satoshi Makabe, Ninomiya, all of Japan, assignors to Sankyo Organic Chemicals Co., Ltd., Kawasaki, Japan

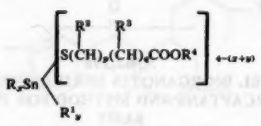
Continuation-in-part of Ser. No. 499,203, Aug. 21, 1974, abandoned. This application Apr. 29, 1975, Ser. No. 572,848

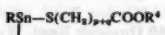
Claims priority, application Japan, Oct. 11, 1973, 48-113239

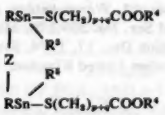
Int. Cl.² C07F 7/22

U.S. Cl. 260—429.7 11 Claims

1. A process for the preparation of a stabilizer for synthetic resins mainly a consisting of a molecular weight increased alkyltin mercaptocarboxylic acid ester which is characterized by reaccting an alkyltin mercaptocarboxylic acid alkylester having a formula selected from the group consisting of reacting







in which R is selected from the group consisting of an aliphatic alkyl group having 1 – 12 carbon atoms and a phenyl group; R^1 is selected from the group consisting of an aliphatic alkylthio group having 8 – 18 carbon atoms, an aliphatic alkanoyloxy group having 8 – 18 carbon atoms, a residue of a monoalkylester of maleic acid in which the alkyl is an aliphatic alkyl containing 8 – 18 carbon atoms and a benzoyloxy group; R^2 and R^3 are the same or different and each is selected from the group consisting of hydrogen, an aliphatic alkyl group having 1 – 4 carbon atoms and a phenyl group; R^4 is selected from the group consisting of an aliphatic alkyl group having 1 – 8 carbon atoms and an aliphatic alkoxyalkyl group having 3 – 6 carbon atoms; R^5 is selected from the group consisting of an aliphatic alkyl group having 1 – 12 carbon atoms, an aliphatic alkanoyloxy group having 8 – 18 carbon atoms and a $-S(CH_2)_{p+q}COOR^4$ group; x and y are integers of 1 to 3 and 0 to 1, respectively, in which $x+y$ is up to 3 inclusive; p and q are integers of 1 to 2 and 0 to 1, respectively; and Z is selected from the group consisting of oxygen, sulfur and a divalent maleic acid residue,

with a monovalent aliphatic alcohol having 4 – 18 carbon atoms, a divalent aliphatic alcohol having 2 – 6 carbon atoms or an aliphatic alkoxyalkyl alcohol having 4 – 10 carbon atoms, the boiling point of said alcohol being higher than that of an alcohol having the formula R^4OH, in which R^4 is the same as above, by at least 30°C,

at a temperature of 100° to 200°C in the absence of a catalyst, with removal of the lower boiling alcohol produced.

3,962,297

HIGH BURNING RATE CATALYST

William E. Hill, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 7, 1969, Ser. No. 805,385

Int. Cl.² C07F 15/02

U.S. Cl. 260—439 CY 3 Claims

1. 1-isopropenyl-2-ferrocenoylcarborane.

3,962,298

PREPARATION OF HIGHLY SOLUBLE BISMUTH SALTS OF ORGANIC ALKANOIC ACIDS

Peter Cukor, Natick, and Kurt B. Kilichowski, Lexington, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed July 24, 1974, Ser. No. 491,186

Int. Cl.² C07F 7/94

U.S. Cl. 260—447 2 Claims

1. A composition of matter consisting essentially of a major amount of bismuth (+3)-3,5,5-trimethylhexanate and a minor amount of 3,5,5-trimethylhexanoic acid.

3,962,299

ORGANOPOLYSILOXANE POLYESTERS

Robert W. Stackman, Morristown, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 25, 1974, Ser. No. 463,929

Int. Cl.² C07F 7/18

U.S. Cl. 260—448.8 R 12 Claims

1. A polymerization process for producing an organopolysiloxane polyester which comprises condensing bis(2-hydroxyethyl) terephthalate with an organohalosilane having the formula:

wherein X is a halogen atom; and R is selected from halogen and hydrocarbon radicals, halo-substituted hydrocarbons and cyano-substituted hydrocarbons containing between 1 and about 22 carbon atoms.

3,962,300

PROCESS FOR PRODUCING METHANOL

Heinz Hiller, Bad Vilbel; Gerhard Hochgesand, Neu Isenburg; Emil Supp, Frankfurt am Main; Friedemann Marschner, Weiskirchen, and Gerhard Grunewald, Mainz-Mombach, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 350,849, April 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 130,693, April 2, 1971, abandoned. This application Apr. 15, 1975, Ser. No. 568,532

Claims priority, application Germany, May 19, 1970, 2024301

Int. Cl.² C07C *29/16*

U.S. Cl. 260—449.5 9 Claims

1. In a process for producing methanol by (a) partiallly oxidizing a sulfur-containing high-boiling hydrocarbon in a gasification zone with oxygen and water vapor to produce a raw gas containing carbon monoxide, (b) desulfurizing the raw gas, (c) treating said desulfurized gas with water vapor to convert part of its carbon monoxide to carbon dioxide by reducing the water vapor to hydrogen thereby forming a methanol synthesis gas, and (d) producing methanol by contacting said synthesis gas with a copper-containing catalyst at elevated temperature and pressure, the improvement which comprises

a. effecting the partial oxidation under a pressure which is at least 5 kilograms per square centimeter above the methanol synthesis pressure of step (d),

b. effecting the desulfurization of the raw gas by washing with methanol below 0°C,

c. treating only a portion of the desulfurized gas with water vapor to effect conversion, scrubbing that converted portion with methanol below 0°C to remove at least part of the carbon dioxide, and combining the scrubbed converted portion with the untreated portion of the desulfurized gas, and

d. without compressing the combined gases subjecting them to the methanol synthesis at a temperature of 230° to 280°C under a pressure of 30–80 kilograms per square centimeter absolute pressure.

3,962,301

PREPARATION OF ALKYLENE DIISOCYANATES

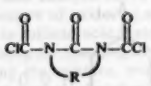
Laurence I. Peterson, Doylestown, Pa., and Michael J. VanEyck, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 5, 1975, Ser. No. 555,481

Int. Cl.² C07C *118/00*

U.S. Cl. 260—453 P 9 Claims

1. A process for production of alkylene diisocyanates comprising heating, at a temperature sufficient to cause dephosgenation, a compound represented by the formula



(I)

wherein —R— is dimethylene, trimethylene or tetramethylene which may bear from 1 to 8 lower alkyl groups of 1 to 3 carbon atoms each.

3,962,302

PRODUCTION OF ISOCYANATES FROM ESTERS OF CARBAMIC ACIDS (URETHANES)

Rudolph Rosenthal, Broomall, and John G. Zajacek, Devon, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 449,291, March 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 357,301, May 4, 1973, abandoned. This application July 18, 1975, Ser. No. 597,106

The portion of the term of this patent subsequent to Nov. 11, 1992, has been disclaimed.

Int. Cl.² C07C *118/00*

U.S. Cl. 260—453 P 16 Claims

1. A method for the production of isocyanates from esters or carbamic acids having the formula $R(NHCOOR')_x$ or $(RNHCOO)_xR'$ wherein R is a substituted or unsubstituted mono-, di- or trivalent organic radical selected from the group consisting of a saturated or monoolefinic unsaturated straight or branched chain aliphatic or cycloaliphatic radical containing not more than 32 carbon atoms, an alkoxyalkyl radical having not more than 32 carbon atoms, an aryl radical, an aralkyl radical, and an alkaryl radical containing 1 to 5 rings; R′ is a substituted or unsubstituted mono-, di- or trivalent radical selected from the group consisting of a saturated or monoolefinic unsaturated straight or branched chain aliphatic or cycloaliphatic radical containing not more than 32 carbon atoms, an alkoxyalkyl having not more than 32 carbon atoms, an aryl radical, an aralkyl radical, and an alkaryl radical containing 1 to 3 rings; and x is 1, 2 or 3, and R and R′ being the same or different, respectively, where x is 2 or 3, which comprises thermally decomposing said ester at a temperature in the range of from 175°C. to 350°C. while said ester is dissolved in an inert solvent to produce the isocyanate and alcohol, said solvent being characterized as a compound which is (a) a solvent for said ester, (b) liquid and stable at said reaction temperature and (c) non-reactive with said isocyanate produced in said thermal decomposition reaction and selected from the group consisting of aliphatic hydrocarbons having from 4 to 32 carbon atoms, the halo- and mono-nitro substituted derivatives of said aliphatic hydrocarbons, cycloaliphatic hydrocarbons, or aromatic hydrocarbons having from 1 to 3 rings, the alkyl benzenes having from 1 to 15 carbon atoms in the alkyl group, the halo- and mono-nitro substituted derivatives of said aromatic hydrocarbons, oxygenated compounds containing from 4 to 32 carbon atoms selected from the group consisting of ethers, ketones, and esters of organic carboxylic acids and sulfur analogues of said oxygenated compounds, and separately recovering said isocyanate and alcohol.

3,962,303

NOVEL BENZOYLPHENYLACETIC ACID DERIVATIVES

Jean Meier, La Varenne Saint-Hilaire, and Odile Le Martret, Paris, both of France, assignors to Roussel-UCLAF, Paris, France

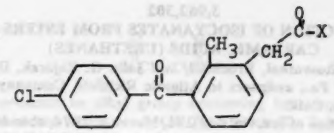
Division of Ser. No. 476,667, June 5, 1974, Pat. No. 3,931,286. This application Oct. 23, 1975, Ser. No. 625,267

Claims priority, application France, June 14, 1973, 73.21622

Int. Cl.² C07C *69/00*

U.S. Cl. 260—453 RW 3 Claims

1. A benzoylphenylacetic acid compound of the formula



wherein X is

Z is alkyl of 1 to 4 carbon atoms and Y is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms.

3,962,304

ALKOXY-SUBSTITUTED BENZYL DITHIOCARBAMIC ACID ESTERS

Kiyoshi Matsushima; Masao Miyamoto, and Nobuo Fukazawa, all of Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 11, 1969, Ser. No. 884,321
Claims priority, application Japan, Dec. 20, 1968, 43-93912
Int. Cl.² C07C *155/08*
U.S. Cl. 260—455 A **5 Claims**

1. Alkoxy-substituted benzyl dithiocarbamate selected from the group consisting of 2-methoxy-5-methyl-benzyl-N,N-dimethyldithiocarbamate, 2-methoxy-5-chlorobenzyl-N,N-dimethyldithiocarbamate, 4-isopropoxy-3-chlorobenzyl-N,N-di-n-propyldithiocarbamate -chlorobenzyl-N,N-di-n-propyldithiocarbamate 3-chloro-4-ethoxybenzyl-N,N-diethyldithiocarbamate.

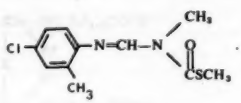
3,962,305

ACYLFORMANIDINE THIOCARBAMATES

Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 439,507, Feb. 4, 1974, abandoned. This application May 7, 1975, Ser. No. 575,313
Int. Cl.² C07C *155/02*
U.S. Cl. 260—455 A **10 Claims**

1. A compound having the formula



3,962,306

SULFONYLOXYPHENYLUREA COMPOUNDS AND HERBICIDAL COMPOSITIONS

Engelbert Kuhle, Bergisch-Gladbach; Erich Klauke, Odenthal-Hahnenberg, and Ludwig Eue, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 14, 1974, Ser. No. 479,389
Claims priority, application Germany, July 7, 1973, 2334607
Int. Cl.² C07C *143/68*
U.S. Cl. 260—456 A **2 Claims**

1. N-(3-chloro-4-chloromethylsulfonyloxy-phenyl)-N',N'-dimethylurea.

2. N-(3-chloro-4-methylsulfonyloxy-phenyl)-N',N'-dimethylurea.

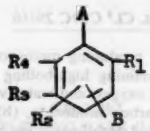
3,962,307

CYANOBENZENEACETONITRILES

Elmore Louis Martin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 241,849, April 6, 1972, Pat. No. 3,877,927, which is a continuation-in-part of Ser. No. 201,995, Nov. 24, 1971, abandoned. This application Feb. 18, 1975, Ser. No. 550,853
Int. Cl.² C07C *121/66*
U.S. Cl. 260—465 H **4 Claims**

1. A compound having the formula



wherein

A and B are different, one being a Z group and the other being a CR_5R_6Z radical; wherein R_5 and R_6 are each independently hydrogen or methyl, and Z is the cyano group; and

each of R_1, R_2, R_3, and R_4 independently is hydrogen, a C_1–C_7 alkyl, a halogen, or the nitro group;

provided that:

a. at most two of R_1, R_2, R_3, and R_4 are nitro groups;

b. at most two of R_1, R_2, R_3, and R_4 are halogens;

c. at least one of R_1, R_2, R_3, and R_4 is hydrogen or halogen;

d. at least one of R_1, R_2, R_3, and R_4 is a C_1–C_7 alkyl;

e. no nitro groups are ortho to each other;

f. no alkyl groups are ortho to each other;

g. each alkyl group has at most three carbon atoms in a straight chain from the point of attachment to the aromatic ring.

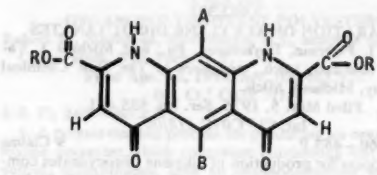
3,962,308

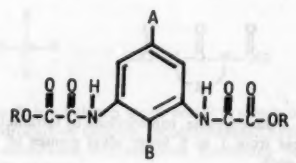
PROCESS FOR CONVERTING ESTERS TO AMINE SALTS

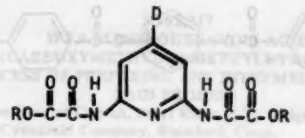
Anthony A. Sinkula, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 28, 1974, Ser. No. 501,055
Int. Cl.² C07D *215/48, 213/75*; C07C *101/44*
U.S. Cl. 260—465 D **12 Claims**

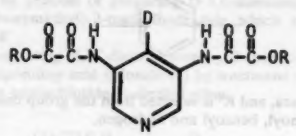
1. A process for converting esters to physiologically acceptable amine salts which comprises the step of reacting an ester selected from the group consisting of







and



wherein R is selected from the group consisting of alkyl from one to six carbon atoms, inclusive, phenyl, and phenylalkyl wherein alkyl has one to four carbon atoms, inclusive; A and B are the same or different and are selected from the group consisting of hydrogen, alkyl of one to four carbon atoms, inclusive, phenyl, alkoxy of one to four carbon atoms, inclusive, halogen, trifluoromethyl, cyano, carboxy, and nitro with the proviso that neither A nor B is nitro in the pyrido[3,2-g]quinoline series; D is selected from the same group as A and B; with a physiologically acceptable amine in a solvent consisting essentially of water.

3,962,309

AMMOXIDATION PROCESS

Tao P. Li, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 320,372, Jan. 2, 1973, Pat. No. 3,886,096. This application Dec. 30, 1974, Ser. No. 537,493

Int. Cl.² C07C *120/14*

U.S. Cl. 260—465.3 4 Claims

1. A process for producing acrylonitrile or methacrylonitrile which comprises reacting an olefin selected from the group consisting of propylene and isobutylene with ammonia and oxygen in amounts such that the molar ratio of ammonia to olefin is in the range from about 0.5:1 to 5:1 and the molar ratio of oxygen to olefin is from about 0.5:1 to 4:1 at a temperature in the range from about 250° to 650°C in contact with a catalyst system consisting essentially of the elements antimony, uranium, iron and tungsten in a catalytic active oxidized state represented by the formula

$$Sb_aU_bFe_cW_dO_e$$

wherein *a* is 1–10, *b* is 0.01–1, *c* is 0.01–1, *d* is 0.001–0.1 and *e* is a number taken to satisfy the average valences of the Sb, U, Fe and W in their catalytic active oxidation states prepared by forming a mixture of oxides or sulfates of antimony, uranium and iron in sulfuric acid, oxidizing said mixtures with nitric acid, digesting the resulting mixture, adjusting the pH to about 8, filtering the mixture, mixing the filter cake with ammonium tungstate or phosphotungstic acid, evaporating the filter cake mixture to dryness, then heating the dried filter cake mixture at a temperature from about 500° to about 1150°C to form said catalytic active oxidation states.

3,962,310

AMMOXIDATION PROCESS

Tao P. Li, Chesterfield, and Charles W. Hobbs, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 320,373, Jan. 2, 1973. This application Dec. 30, 1974, Ser. No. 537,495

Int. Cl.² C07C *120/14*

U.S. Cl. 260—465.3 4 Claims

1. A process for producing acrylonitrile or methacrylonitrile which comprises reacting in the vapor phase an olefin selected from the group consisting of propylene and isobutylene with ammonia and oxygen in amounts such that the molar ratio of ammonia to olefin is in the range from about 0.5:1 to about 5:1 and the molar ratio of olefin to oxygen is in the range from about 0.5:1 to 4:1, at a temperature in the range from about 250° to 650° C in contact with a catalyst system consisting essentially of the elements antimony, uranium, iron and bismuth in an oxidized state represented by the formula

$$Sb_aU_bFe_cBi_dO_e$$

wherein *a* is 1–10, *b* is 1–10, *c* is 0.01–1, *d* is 0.001–0.1 and *e* is a number taken to satisfy the average valences of the Sb, U, Fe and Bi in their catalytic active oxidation states prepared by forming a mixture of oxides or sulfates of antimony, uranium, iron and bismuth in sulfuric acid, oxidizing said mixture with nitric acid, digesting the resulting mixture, adjusting the pH to about 8, filtering the mixture, mixing the filter cake with a catalyst support and evaporating the filter cake mixture to dryness, then heating the dried mixture at a temperature of from about 500° to about 1150°C to form said active oxidation states.

3,962,311

PREPARATION OF CYCLOHEXADIENE COMPOUNDS

Peter Loeliger, Pfaffhausen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

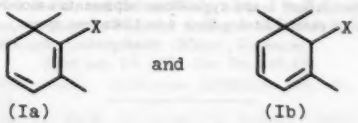
Filed Aug. 16, 1974, Ser. No. 497,993

Claims priority, application Switzerland, Aug. 24, 1973, 12195/73

Int. Cl.² C07C *67/30*, *45/00*; C07B *29/00*

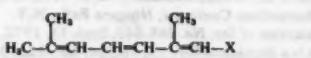
U.S. Cl. 260—468 L 5 Claims

1. A process for the manufacture of an isomeric mixture of cyclohexadienes of the formulae:



(Ia) (Ib)

wherein X is selected from the group consisting of —$COCH_3$ and —$COOR_1$, R_1 is a lower alkyl group having from 1 to 6 carbon atoms; which process comprises heating a compound of the formula:



wherein X is as defined above; in the presence of an inert organic solvent and at a temperature of from about 180°C. to about 250°C.

3,962,312
9,11,15-TRIHYDROXY PROST-5-ENOIC ACID ANALOGUES

Masaki Hayashi; Tadao Tanouchi, both of Takatsuki; Hiroyuki Ito, Suita, and Isao Ohyama, Kyoto, all of Japan, assignors to Ono Pharmaceutical Company, Osaka, Japan

Filed Sept. 19, 1973, Ser. No. 398,714
Claims priority, application Japan, Sept. 21, 1972, 47-94972; Mar. 23, 1973, 48-33234
Int. Cl.² C07C *61/38, 69/74*
U.S. Cl. 260—468 D 6 Claims

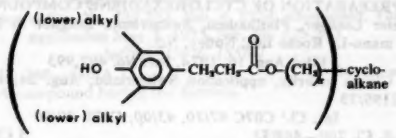
1. 15(ξ)-Methyl-13,14-dihydro-PGF_2 .
2. 15(ξ),16(R)-Dimethyl-13,14-dihydro-PGF_2 .
3. 16(ξ)-Phenyl-ω-trinor-13,14-dihydro-PGF_2 .
4. 16(ξ)-Cyclohexyl-ω-trinor-13,14-dihydro-PGF_2 .
5. 16(ξ) -Cyclopentyl-ω-tetranor-13,14-dihydro-PGF_2 .

3,962,313
CYCLOALIPHATIC ALKYLHYDROXYPHENYLALKANOATES

Martin Dexter, 416 Cedar Drive, Briarcliff Manor, N.Y. 10510, and David H. Steinberg, 2608 Davidson Ave., Bronx, N.Y. 10468

Continuation of Ser. No. 422,215, Dec. 6, 1973, abandoned, which is a continuation of Ser. No. 179,155, Sept. 9, 1971, abandoned, which is a continuation-in-part of Ser. No. 648,998, June 26, 1967, Pat. No. 3,657,322, which is a continuation-in-part of Ser. No. 372,083, June 2, 1964, abandoned. This application Dec. 16, 1974, Ser. No. 533,379
Int. Cl.² C07C *69/75*
U.S. Cl. 260—473 S 11 Claims

1. An ester of a monohydric alicyclic alcohol, the ester having the formula



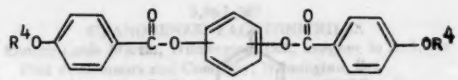
wherein *x* is 0 or 1, and cycloalkane represents a monovalent cycloalkyl radical having from 4 to 12 carbon atoms.

3,962,314
OXYBENZOYL DIOXYARYLENE MONO- AND DIESTERS

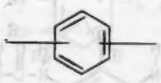
James Economy, Eggertsville; Steve G. Cottis, Amherst, and Bernard E. Nowak, Lancaster, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Continuation of Ser. No. 288,845, Sept. 13, 1972, abandoned, which is a division of Ser. No. 96,234, Dec. 12, 1970, Pat. No. 3,772,250. This application Feb. 28, 1975, Ser. No. 554,284
Int. Cl.² C07C *69/78*
U.S. Cl. 260—473 S 5 Claims

1. A linear polyester of the formula



wherein the indicated bonds on the phenylene nucleus represented by



are meta or para, and R^4 is selected from the group consisting of lower alkanoyl, benzoyl and hydrogen.

3,962,315
PROCESS FOR THE PURIFICATION OF TEREPHTHALIC ACID DIMETHYL ESTER

Eberhard Achsel, Fischbach, Taunus; Hans-Peter Hortig, Hattersheim, Main; Heinrich Seipp, and Heinz Giller, both of Offenbach, Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 7, 1974, Ser. No. 467,833
Claims priority, application Germany, May 9, 1973, 2323219
Int. Cl.² C07C *67/48*
U.S. Cl. 260—475 B 3 Claims

1. A process for the purification of crude dimethyl terephthalate (DMT) made by the oxidation of p-xylene or p-xylene/p-toluic acid methyl ester (pTE) and subsequent esterification and containing as impurities dimethyl isophthalate (DMI), dimethyl orthophthalate (DMO) and (pTE) which comprises adding crude molten dimethyl terephthalate to a body of methanol to form a mixture of said crude DMT and a saturated solution of DMT in said methanol, maintaining the mixture of DMT and methanol solution at a temperature above the melting point of the eutectic mixture of DMT and DMI, DMO and pTE having the highest melting point, vigorously agitating the mixture of DMT and methanol solution, continuing to add crude molten DMT to said mixture to cause relatively pure DMT to crystallize therefrom and to cause the impurities to dissolve in said solution.

3,962,316
CARBAMATE

Karl Kiehs, Lampertheim; Rolf Huber, Ludwigshafen, and Heinrich Adolphi, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Continuation-in-part of Ser. No. 371,778, June 20, 1973, abandoned. This application Mar. 17, 1975, Ser. No. 558,885
Claims priority, application Germany, June 26, 1972, 2231249
Int. Cl.² C07C *125/06*
U.S. Cl. 260—479 C 4 Claims

1. o-(α-methoxy-β-chloro)-ethoxyphenyl-N-methylcarbamate.

3,962,317
D-3,6-DIAMINOHEXANOIC ACID 2-(CARBOXYMETHYL)-2-METHYLHYDRAZIDE, PROCESS OF PREPARING AND INTERMEDIATES OF SAID PROCESS

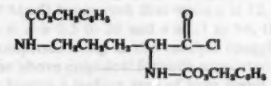
William Vincent Curran, Pearl River, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Aug. 19, 1974, Ser. No. 498,828
Int. Cl.² C07C *109/97, 125/06*
U.S. Cl. 260—482 B 7 Claims

1. A compound selected from the group consisting of D-3,6-diaminohexanoic acid 2-(carboxymethyl)-2-methylhydrazide, the pharmacologically acceptable acid-addition salts thereof, the pharmacologically acceptable alkali metal salts thereof, and the pharmacologically acceptable alkaline earth metal salts thereof.

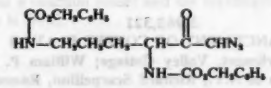
7. The process of preparing D-3,6-diaminohexanoic acid 2-(carboxymethyl)-2-methylhydrazide which comprises the steps of

a. converting N,N'-dicarbobenzoxy-D-ornithine to the corresponding acid chloride (I) by treatment with phosphorus pentachloride in diethyl ether,



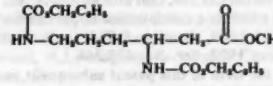
(I)

b. treating said acid chloride with diazomethane in diethyl ether to form the diazoketone (II),



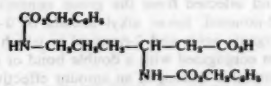
(II)

c. converting said diazoketone to the D-β-lysine derivative (III) by treatment with silver benzoate and triethylamine in methanol,



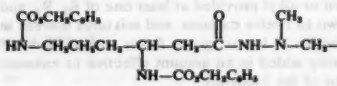
(III)

d. hydrolyzing said D-β-lysine derivative under basic conditions to form the free acid (IV),



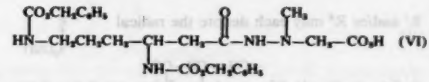
(IV)

e. coupling said free acid with ethyl N-methylhydrazinoacetate in tetrahydrofuran in the presence of N-methylmorpholine and isobutyl chloroformate to form D-3,6-di(benzyloxycarbonylamino)-hexanoic acid 2-(carbethoxymethyl)-2-methylhydrazide (V),



(V)

f. hydrolyzing said hydrazide ester under basic conditions to form the free acid (VI), and



(VI)

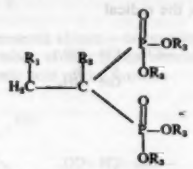
g. hydrogenating said free acid in methanol in the presence of 10% palladium on carbon.

3,962,318
SUBSTITUTED ETHANE DIPHOSPHONIC ACIDS AND SALTS AND ESTERS THEREOF

Al F. Kerst, Littleton, Colo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 463,224, April 23, 1974, Pat. No. 3,899,528, which is a division of Ser. No. 283,147, Aug. 23, 1972, Pat. No. 3,833,690, which is a division of Ser. No. 27,988, April 13, 1970, Pat. No. 3,705,191. This application Mar. 21, 1975, Ser. No. 560,837
Int. Cl.² C07F *9/38*
U.S. Cl. 260—502.4 P 6 Claims

1. An ethane diphosphonate of the formula



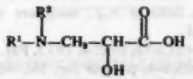
wherein each R_3 is selected from the group consisting of hydrogen, alkali metal ions and ammonium ions, and R_1 and R_2 are either hydroxy or carboxy provided that either R_1 or R_2 but not both is always hydroxy.

3,962,319
α-HYDROXY-β-AMINOCARBOXYLIC ACIDS

Friedrich Becke, and Helmut Fleig, both of Heidelberg, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

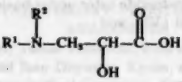
Filed Jan. 19, 1972, Ser. No. 219,151
Claims priority, application Germany, Jan. 26, 1971, 2103453
Int. Cl.² C07C *101/30, 101/72, 109/097, 109/06*
U.S. Cl. 260—514 J 8 Claims

1. An α-hydroxy-β-aminocarboxylic acid of the formula:



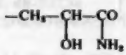
in which R^1 and R^2 may be identical or different and each denotes alkenyl of two to twenty carbon atoms, cycloalkyl or cycloalkenyl of five or six carbon atoms, or aralkyl of seven to 12 carbon atoms or aralkenyl of eight to 12 carbon atoms.

2. An α-hydroxy-β-aminocarboxylic acid of the formula:

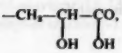


(I)

R^1 and/or R^2 may each denote the radical

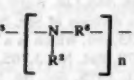


or the radical

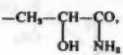


R^1 may also denote hydrogen, a hydroxyl group, alkylol of one to four carbon atoms or the radical

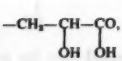
or the radical



in which R^2 in said two last-mentioned radicals denotes alkyl of two to 20 carbon atoms, alkenyl of two to 20 carbon atoms, cycloalkyl or cycloalkenyl respectively of five or six carbon atoms, aralkyl of seven to 12 carbon atoms, aralkenyl of eight to 12 carbon atoms, the radical



or the radical



in which R^5 denotes the above meanings for R^2 or alkylol or alkoxy-methyl of up to six carbon atoms, R^6 denotes alkylene of two to 12 carbon atoms and *n* denotes zero or 1.

3,962,320

BIS-SUBSTITUTED BENZYL ACETIC ACIDS

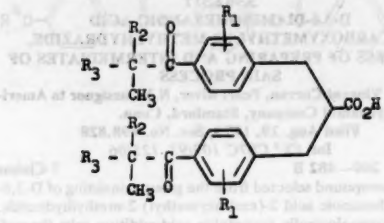
William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandoz, Inc., East Hanover, N.J.

Division of Ser. No. 421,673, Dec. 4, 1973, Pat. No. 3,884,961, which is a continuation-in-part of Ser. No. 403,225, Oct. 3, 1973, abandoned, which is a continuation-in-part of Ser. No. 333,892, Feb. 20, 1973, abandoned. This application Jan. 31, 1975, Ser. No. 545,736

Int. Cl.² C07C *63/33*

U.S. Cl. 260—515 R **4 Claims**

1. A compound of the formula:



where

R_1 each independently represents hydrogen, fluorine, chlorine or straight chain lower alkoxy, and

R_2 and R_3 each independently represent lower alkyl having 1 to 2 carbon atoms or a pharmaceutically acceptable salt thereof.

3,962,321

ENHANCEMENT OF COFFEE FLAVOR

Thomas H. Parliment, Valley Cottage; William P. Clinton, Monsey, both of N.Y.; Richard Scarpellino, Ramsey, N.J.; Robert J. Soukup, New City, and Martin F. Epstein, Pearl River, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Division of Ser. No. 243,055, April 11, 1972, Pat. No. 3,886,297, which is a continuation-in-part of Ser. No. 129,609, March 30, 1971, Pat. No. 3,655,397, which is a continuation-in-part of Ser. No. 867,887, Oct. 12, 1969, abandoned, which is a continuation-in-part of Ser. No. 857,227, Sept. 11, 1969, abandoned. This application Dec. 17, 1973, Ser. No. 425,366

The portion of the term of this patent subsequent to Apr. 11, 1989, has been disclaimed.

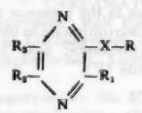
Int. Cl.² A23L *1/234*

U.S. Cl. 426—535 **13 Claims**

1. A process for enhancing the flavor of foodstuffs comprising adding thereto a mixture formulated to give a coffee-like flavor to said foodstuff of:

a. a compound selected from the group consisting of 2-nonenal, 2-nonenol, lower alkyl acetals of 2-nonenal, esters of organic acids and 2-nonenol in which the carbonyl is not conjugated with a double bond or aromatic ring, and mixtures thereof in an amount effective to impart woody coffee-like flavor to the foodstuff; and

b. a compound represented by the formula:



wherein X is oxygen or sulfur, R is a lower alkyl, and R_1, R_2 and R_3 hydrogen or alkyl provided at least one of R_1, R_2, and R_3 is alkyl of two to twelve carbons, and mixtures thereof in an amount effective to impart green flavor to the foodstuff said mixture being added in an amount effective to enhance the coffee flavor of the foodstuff.

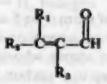
3,962,322

PROCESS FOR UNSATURATED ALDEHYDE OXIDATION USING A SUPPORTED CATALYST

Peter C. Richardson, Morristown, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Sept. 25, 1974, Ser. No. 508,929
Int. Cl.² C07C 51/32
U.S. Cl. 260—530 N 10 Claims

1. In a process for the conversion of an unsaturated aldehyde to the corresponding unsaturated carboxylic acid which comprises reacting in the gas phase at a temperature sufficient to accomplish the desired reaction an aldehyde of the following formula:



wherein R_1 is hydrogen or an alkyl radical of from 1 to 6 carbon atoms and R_2 and R_3 are hydrogen or methyl radicals; with oxygen in the presence of a supported catalyst having the empirical formula $Mo_aV_bW_cMn_dO_e$, the atomic ratio of Mo:V:W:Mn:O being such that when *a* is 12, *b* is 0.5 to 12, *c* is 0.1 to 6, *d* is 0.5 to 20 and *e* is 37 to 94, the improvement which comprises using as the catalyst unagglomerated particles of the above empirical formula supported on porous silica particles having a surface area of from about 25 to about 350 m^2/gm and a porosity of from about 0.2 to about 1.0 cc/gm, the catalytic metals being contained essentially only on the surfaces of the particles, and wherein said process is performed in a reaction vessel and the maximum exotherm temperature is 30°C.

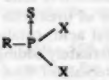
3,962,323

PROCESS FOR PREPARING ALKYL- OR ARYL-PHOSPHONOTHIOIC DIHALIDES

Arthur D. F. Toy, Stamford, Conn., and Eugene H. Uhing, Ridgewood, N.J., assignors to Stauffer Chemical Company, Westport, Conn.

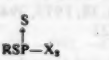
Filed Nov. 14, 1974, Ser. No. 523,761
Int. Cl.² C07F 9/42
U.S. Cl. 260—543 P 5 Claims

1. A method of preparing compounds of the formula:



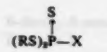
(II)

wherein R is selected from the group consisting of C_1-C_{10} alkyl; cycloalkyl of 4 – 6 carbons in the ring and the C_1-C_4 alkyl substituted derivatives thereof; aralkyl of up to 2 fused rings, the alkyl portion having from 1 to 20 carbon atoms; aryl of up to 3 fused rings and the C_1-C_4 alkyl substituted derivatives thereof; or biphenyl and the C_1-C_4 alkyl substituted derivatives thereof and X is selected from the group consisting of chlorine or bromine, comprising contacting under at least an autogenous pressure at a temperature of from about 200°C. to about 400°C. a reactant selected from the group consisting of compounds of the structural formulas:



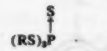
(III)

or



(IV)

or



(V)

wherein R and X are as defined above, with phosphorus trihalide.

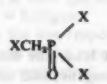
3,962,324

PROCESS FOR PREPARING HALOGENOMETHANE-PHOSPHONIC ACID DIHALIDES

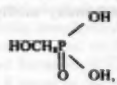
Hans-Jerg Kleiner, Bad Soden, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 3, 1973, Ser. No. 420,882
Claims priority, application Germany, Dec. 5, 1972, 2259454
Int. Cl.² C07F 9/38, 9/42
U.S. Cl. 260—543 P 2 Claims

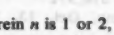
1. A process for preparing halogenomethanephosphonic acid dihalides having the general formula



wherein X represents chlorine or bromine which comprises: reacting a member of the group consisting of hydroxymethane-phosphonic acid of the formula



alkali metal or ammonium salts of hydroxymethane-phosphonic acid and mono- or di- alkyl esters of hydroxymethane phosphonic acid or alkali metal or ammonium salts of such esters, with acid halides having the formula



wherein *n* is 1 or 2, in the presence of

1. compounds containing at least one 3- to 5-valent nitrogen or phosphorus atom, which is bound with at least 3 valences to organic radicals having up to 20 carbon atoms, two of said valences being able to form a double bond, or in presence of
2. fully amidated tribasic organic or inorganic acids of 3-valent or 5-valent phosphorus, the nitrogen-atoms of which are substituted by aliphatic radicals having up to 20 carbon atoms and the organic radicals of which may contain up to 20 carbon atoms.

3,962,325

TRIFLUOROMETHYLMALONYL FLUORIDE

Carl George Krespan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 4, 1973, Ser. No. 403,416
Int. Cl.² C07C 55/08
U.S. Cl. 260—544 F 1 Claim

1. Trifluoromethylmalonyl fluoride of the formula

3,962,326
PROCESS FOR THE MANUFACTURE OF CARBOXYLIC ACID CHLORIDES

Günther Semler, Kelkheim, Taunus; Georg Schaeffer, Hofheim, Taunus, and Karl Waldmann, Neuenhain, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 24, 1974, Ser. No. 463,826
Claims priority, application Germany, Apr. 26, 1973, 2321122
Int. Cl.² C07C 51/58
U.S. Cl. 260—544 K 7 Claims

1. A process for preparing a carboxylic acid chloride which comprises reacting a carboxylic acid or carboxylic acid anhydride with phosgene at a temperature from 0° to 180°C. in the presence of 0.01 to 10 percent, by weight of said carboxylic acid or carboxylic acid anhydride, of a catalyst which is a trisubstituted phosphine oxide or phosphine sulfide of the formula

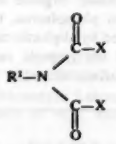
or is a reaction product thereof with at least one member selected from the group consisting of phosgene, said carboxylic acid, and said carboxylic acid anhydride, wherein X is oxygen or sulfur; R_1 and R_2, taken alone, are lower alkyl having up to 6 carbon atoms or phenyl; R_1 and R_2, taken together, are saturated or unsaturated alkylene having 4 to 5 carbon atoms; and R_3 is alkyl having up to 20 carbon atoms, haloalkyl, hydroxyalkyl, 2,4,6-trichlorophenoxy methyl, or phenyl.

3,962,327
PROCESS FOR THE PRODUCTION OF N-HALOFORMYLCARBAMIC ACID HALIDE COMPOUNDS

Hans Georg Schlee, Cologne; Klaus Sasse, Schildgen, and Engelbert Kuhle, Bergisch, Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 1, 1974, Ser. No. 510,971
Claims priority, application Germany, Oct. 13, 1973, 2351556
Int. Cl.² C07C 125/03
U.S. Cl. 260—544 C 16 Claims

1. Process for the preparation of an N-haloformylcarbamic acid halide compound of the formula



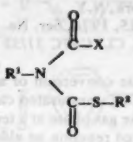
(I)

in which

R^1 is substituted alkyl of up to 8 carbon atoms, substituted cycloalkyl of from 5 to 7 ring carbon atoms or substituted aralkyl or aryl of from 6 to 10 carbon atoms in the aryl moiety, wherein the substituents are selected from the group consisting of halogen, alkyl and haloalkyl of from 1 to 4 carbon atoms; and

X is fluorine, chlorine or bromine,

which process comprises reacting an N-haloformylcarbamic acid thiol ester of the formula



(II)

in which

R^1 and X are identified as above, and

R^2 is straight-chain or branched alkyl of from 1 to 6 carbon atoms, aralkyl of from 6 to 10 carbon atoms or substituted aralkyl of from 6 to 10 carbon atoms wherein the substituent is selected from alkyl of up to 4 carbon atoms and halogen,

with at least 2 moles of fluorine, chlorine or bromine per thiol ester group at a temperature of −20° to 100°C.

3,962,328
ADAMANTYL THIOAMIDES

Koji Aigami, and Yoshiaki Inamoto, both of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1975, Ser. No. 572,355
Claims priority, application Japan, May 1, 1974, 49-49067; Dec. 26, 1974, 50-1723
Int. Cl.² C07C 153/057
U.S. Cl. 260—551 S 1 Claim

1. 1,3-bis(aminothiocarbonylmethyl)adamantane.

3,962,329
MANUFACTURE OF GRANULAR ISOBUTYLIDENEDIUREA

Guenther Schoenaich, Ludwigshafen; Otto Grabowsky, Limburgerhof; Johann Mayer, and Guenther Matthias, both of Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Oct. 25, 1974, Ser. No. 517,889
Claims priority, application Germany, Nov. 5, 1973, 2355212
Int. Cl.² C07C 127/00; C05C 9/00; C05B 11/04
U.S. Cl. 260—553 R 5 Claims

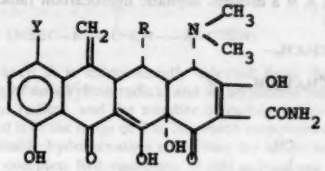
1. In a continuous process for the production of solid granular isobutylidene diurea by condensation of urea with isobutyraldehyde in the presence of a mineral acid, catalyst, the improvement consisting of repeatedly alternately adding phosphoric and sulfuric acid at different intervals of time to the continuous feed of the urea and isobutyraldehyde.

3,962,330
PROCESS FOR THE PREPARATION OF 6-DEMETHYL-6-DEOXY-6-METHYLENE-TETRACYCLINES

Gino Cotti, Monza (Milan), Italy, assignor to Ankerfarm, S.p.A., Milan, Italy

Filed Sept. 24, 1974, Ser. No. 509,054
Claims priority, application Italy, Sept. 28, 1973, 29488/73
Int. Cl.² C07C 103/22
U.S. Cl. 260—559 AT 4 Claims

1. A process for the preparation of 6-demethyl-6-deoxy-6-methylene-tetracycline having the general formula II



II

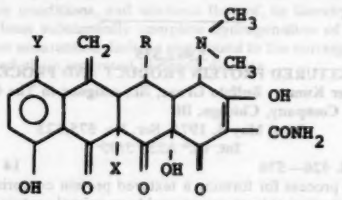
where:

Y = H, halogen

R = H, OH, —O—CO—R'

R' = alkyl group containing from 1 to 6 C atoms,

by means of the reductive dehalogenation effected with the employment of tertiary phosphines, arsines or stibines, of 11a-halo-6-demethyl-6-deoxy-6-methylene tetracycline having the general formula I



I

where

Y = H, halogen

R = H —OH —O—COR'

R' = alkyl group containing from 1 to 6 C atoms,

in polar solvents selected from the group consisting of alcohols containing at least one hydroxy group and from 1 to 4 carbon atoms, methoxyethanol, ethoxyethanol, their mixtures and said alcohols or their mixtures with dioxane, tetrahydrofurane, acetonitrile, N,N'-dimethylformamide and acetone, at temperatures comprised between 10°C and 90°C, for periods of time of from 5 minutes to 80 minutes.

3,962,331

PROCESS FOR THE PREPARATION OF α-6-DEOXYTETRACYCLINES

Gino Cotti, Monza, Italy, assignor to Ankerfarm, S.p.A., Milan, Italy

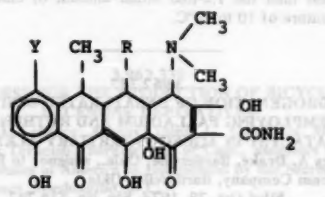
Filed Sept. 25, 1974, Ser. No. 509,055

Claims priority, application Italy, Sept. 28, 1973, 29487/73

Int. Cl.² C07C *103/22*

U.S. Cl. 260—559 AT **5 Claims**

1. A process for the preparation of α-6-deoxytetracycline having the general formula III

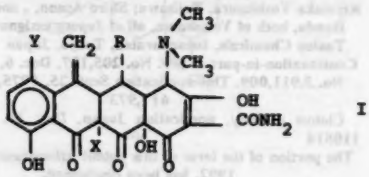


III

where

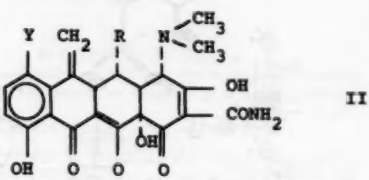
R = H, —OH, —O—CO—R' (—R' = alkyl group containing from 1 to 6 C atoms)

Y = H - halogen by means of the dehalogenation and homogeneous catalytic hydrogenation of 11a-halo-6-demethyl-6-deoxy-6-methylene tetracyclines having the general formula I



I

effected in a single step without isolating intermediate products of general formula II



II

where

Y, R have the meaning stated heretofore

X = halogen

with the use respectively of tertiary phosphines, arsines and stibines in the measure of one mole per mole of tetracycline group compound, of catalysts soluble in the reaction means consisting of complexes of noble metals with electron-donor ligands of the type of the tertiary phosphines, arsines, stibines, in a reaction solvent selected from the group consisting of alcohols containing at least one hydroxy group and from 1 to 4 C atoms, methoxyethanol, ethoxyethanol and their mixtures and said alcohols and their mixtures with at least one of acetonitrile, tetrahydrofuran, dioxane, acetone, N,N'-dimethylformamide and methylisobutylketone at temperatures comprised between 10°C and 100°C, for periods of time of from 1 to 8 hours in the presence of hydrogen and at pressures of from 1 to 160 kg/cm².

3,962,332

BIS-QUATERNARY AMMONIUM COMPOUNDS AND POLYMERS

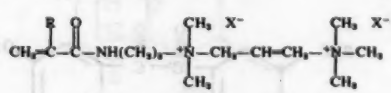
Louis E. Trapasso, Watchung, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 11, 1974, Ser. No. 531,577

Int. Cl.² C07C *103/44*

U.S. Cl. 260—561 N **1 Claim**

1. A composition of the formula:



wherein R is hydrogen or methyl, and X is an anion.

3,962,333

PROCESS FOR THE PRODUCTION OF ACRYLAMIDE AND METHACRYLAMIDE

Kiyotaka Yoshimura, Fujisawa; Shiro Asano, , and Tadatoshi Honda, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

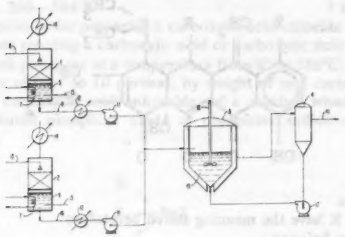
Continuation-in-part of Ser. No. 205,137, Dec. 6, 1971, Pat. No. 3,911,009. This application Sept. 25, 1975, Ser. No. 617,973

Claims priority, application Japan, Dec. 14, 1970, 45-110514

The portion of the term of this patent subsequent to Oct. 7, 1992, has been disclaimed.

Int. Cl.² C07C *103/08*

U.S. Cl. 260—561 N 5 Claims



1. In a process for preparing acrylamide or methacrylamide by reacting acrylonitrile or methacrylonitrile with water in the presence of a metallic copper containing catalyst, the improvement comprising adding to the reaction liquid a promoter for said catalyst, said promoter being selected from the group consisting of copper sulfate, copper nitrate, cupric chloride and a copper salt of a lower fatty acid, in an amount of from 5 to 150 ppm calculated as copper and based upon available water.

3,962,334

AMINOALKYL ETHERS OF 2,2'- AND 3,3'-DIHYDROXYBENZIL

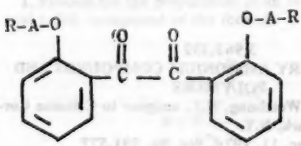
Gerhard R. Wendt, Havertown, and Michael W. Winkley, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 513,354, Oct. 9, 1974, Pat. No. 3,935,191. This application Aug. 8, 1975, Ser. No. 603,556

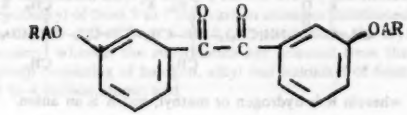
Int. Cl.² C07C *93/06*

U.S. Cl. 260—570.7 9 Claims

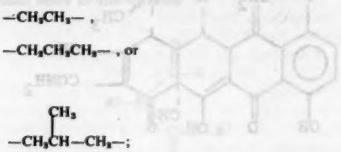
1. A compound of the formula



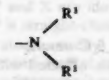
and



wherein A is a divalent aliphatic hydrocarbon radical of the formula



and R is a substituted amino group of the formula



wherein R^1 is methyl, ethyl, propyl, or isopropyl; and the non-toxic, pharmaceutically acceptable acid addition salts thereof.

3,962,335

TEXTURED PROTEIN PRODUCT AND PROCESS

Surinder Kumar, Buffalo Grove, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed May 8, 1975, Ser. No. 575,623

Int. Cl.² A23J *3/00*

U.S. Cl. 426—574 14 Claims

1. A process for forming a textured protein comprising:
a. hydrating at least one vegetable or animal protein source to form a slurry;
b. heating the slurry to at least the boiling point of the slurry to condition the protein source;
c. recovering the conditioned protein source;
d. shaping the recovered protein source;
e. heating and shaped protein source in a liquid hydrophobic medium to induce texture in the protein source; and
f. recovering the textured protein source.

3,962,336

PROCESS FOR THE PREPARATION OF 5-CHLORO-2-TOLUIDINE

Rudolf Lademann, Kelkheim, Taunus, and Franz Landauer, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 16, 1974, Ser. No. 461,453

Claims priority, application Germany, Apr. 18, 1973, 2319645

Int. Cl.² C07C *85/24*

U.S. Cl. 260—579 8 Claims

1. A process for the preparation of the hydrochloride of 5-chloro-2-toluidine which comprises reacting a suspension of 2-toluidine hydrochloride in an inert halohydrocarbon solvent with less than the 1.2-fold molar amount of chlorine at a temperature of 10 to 70°C.

3,962,337

HYDROGENATION OF UNSATURATED DINITRILES EMPLOYING PALLADIUM AND RUTHENIUM CATALYST IN AQUEOUS TERTIARY ALKANOL

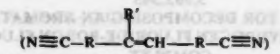
Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 29, 1974, Ser. No. 518,747

Int. Cl.² C07C *87/14*

U.S. Cl. 260—583 K 20 Claims

1. A process for the catalytic hydrogenation of an unsaturated dinitrile feedstock comprising at least one unsaturated dinitrile compound of the formula



wherein each R is independently selected from the group consisting of an alkylene radical and an alkylidene radical, R' is an alkyl radical, and the number of carbon atoms in said compound is in the range of 7 to 30; which comprises contacting, at suitable hydrogenation conditions for the at least substantially complete hydrogenation of said at least one unsaturated dinitrile compound, said feedstock with ammonia; hydrogen; a diluent comprising water and at least one unsubstituted tertiary alkanol, the concentration of the water in the diluent being suitable to permit the desired degree of hydrogenation under said hydrogenation conditions; and a catalyst comprising a first catalyst component selected from the group consisting of elemental palladium and palladium compounds which are reducible by hydrogen to elemental palladium at said hydrogenation conditions, and mixtures thereof, and a second catalyst component selected from the group consisting of elemental ruthenium, ruthenium compounds which are reducible by hydrogen to elemental ruthenium at said hydrogenation conditions, and mixtures thereof, to thereby effect the at least substantially complete hydrogenation of said at least one unsaturated dinitrile compound to the corresponding branched-chain saturated aliphatic diamine.

3,962,338

NOVEL METHODS AND COMPOUNDS EMPLOYED THEREIN

Leonard M. Weinstock, Belle Mead; Roger J. Tull, Metuchen, and Dennis M. Mulvey, Milford, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 172,231, Aug. 16, 1971, abandoned, which is a division of Ser. No. 818,474, April 21, 1969, Pat. No. 3,657,237. This application Nov. 19, 1973, Ser. No. 417,301

Int. Cl.² C07C *91/02, 93/02, 93/10, 95/02*

U.S. Cl. 260—584 R **8 Claims**

1. A process comprising the reductive alkylation of ammonia, a primary amine or a secondary amine wherein the amine substituents are straight or branched chain lower alkyl groups optionally hydroxy substituted by the dropwise addition of a glyceraldehyde selected from D-glyceraldehyde and isopropylidene-D-glyceraldehyde in the presence of a catalyst selected from platinum, palladium and Raney nickel to provide an S-1,2-dihydroxy-3-amino propane, substantially completely free from its rectus isomer.

3,962,339

PROCESS FOR THE PRODUCTION OF BICYCLO DECENONE DERIVATIVES

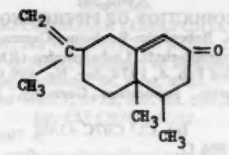
Theodore J. Leitereg, Albany; Dante G. Guadagni, Moraga, and Roy Teranishi, Berkeley, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 113,678, Feb. 8, 1971, abandoned. This application Apr. 6, 1973, Ser. No. 348,556

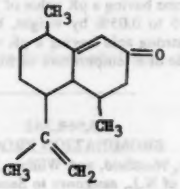
Int. Cl.² C07C *45/00*

U.S. Cl. 260—586 C **1 Claim**

1. A method for preparing a mixture of the compounds



and



and including stereoisomers of each of these compounds, which comprises

a. condensing dihydrocarvone with 3-penten-2-one in the presence of sodium hydride at a temperature of about 60°–120° C., and

b. treating the resulting condensation product with potassium tert-butoxide in dimethylsulphoxide at room temperature.

3,962,340

1,2,6-TRIMETHYLTRICYCLO[5,3,2,0^{2,7}] DODECA-5-ONE

Akira Nagakura, Kawaguchi; Susumu Akutagawa, Yokohama, and Haruki Kurihara, Tokyo, all of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

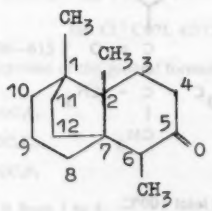
Filed Dec. 27, 1974, Ser. No. 537,005

Claims priority, application Japan, Jan. 11, 1974, 49-6389

Int. Cl.² C07C *49/36*

U.S. Cl. 260—586 G **1 Claim**

1. 1,2,6-Trimethyltricyclo[5,3,2,0^{2,7}]dodeca-5-one having the formula (I)



(I)

3,962,341

PRODUCTION OF PIPERITENONE

Norbert Goetz, Bobenheim-Roxheim, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Feb. 4, 1974, Ser. No. 439,053

Claims priority, application Germany, Feb. 6, 1973, 2305628

Int. Cl.² C07C 45/00

U.S. Cl. 260—586 C 10 Claims

1. A process for the production of piperitenone wherein 3,3-dimethylacrolein is heated in the presence of from 0.005 to 5% by weight, based on the reaction mixture, of an unsubstituted organic monocarboxylic or dicarboxylic acid having 1–7 carbon atoms having a pK value of 1–6 or in the presence of from 0.0005 to 0.05% by weight, based on the reaction mixture, of a strong acid having a pK value of less than 1 in the liquid phase at a temperature of from 165° to 350°C.

3,962,342

BROMINATION PROCESS

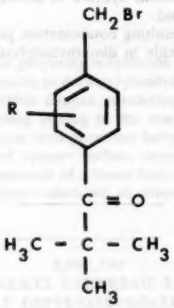
Jerome Linder, Westfield, and William J. Houlihan, Mountain Lakes, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Mar. 24, 1975, Ser. No. 561,485

Int. Cl.² C07C 49/80

U.S. Cl. 260—592 5 Claims

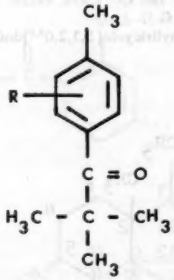
1. An improved process for preparing a compound of the formula



where

R represents hydrogen, halo having an atomic weight of about 19 to 36,

which comprises adding liquid bromine to a compound of the formula



at a temperature of at least 100°C.

3,962,343

METHOD FOR DECOMPOSING AN AROMATIC ALDEHYDE-HYDROGEN FLUORIDE-BORON FLUORIDE COMPLEX

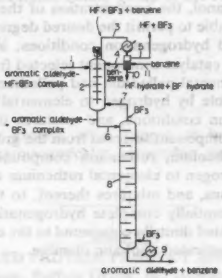
Susumu Fujiyama; Minoru Takagawa, and Shiro Kajiyama, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed May 8, 1974, Ser. No. 468,025

Claims priority, application Japan, May 25, 1973, 48-58333

Int. Cl.² C07C 45/24

U.S. Cl. 260—599 10 Claims



1. A method for decomposing an aromatic aldehyde-hydrogen fluoride-boron trifluoride complex to obtain the aromatic aldehyde, hydrogen fluoride and boron trifluoride separately, characterized by introducing the complex to a gas-liquid contacting column for rapid decomposition, and thereafter rapidly decomposing the complex therein in the presence of benzene at atmospheric or superatmospheric pressure and at a temperature of from about 40°C. to about 130°C. to dissociate hydrogen fluoride from the complex, thereby forming an aromatic aldehyde-boron trifluoride complex, and introducing the resulting complex to a gas-liquid contacting column for complete decomposition, and thereafter subjecting the complex to complete decomposition at atmospheric or superatmospheric pressure and at a temperature of from about 110°C. to about 180°C., thereby dissociating boron trifluoride from the complex.

3,962,344

PROCESS FOR MAKING 1,3-DIENE HYDROCARBONS

Klaus-Jurgen Ploner, Greifensee; Jost Wild, Uster, and Trudi Sigg-Grutter, Winterthur, all of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

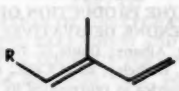
Filed May 14, 1974, Ser. No. 469,918

Claims priority, application Switzerland, May 18, 1973, 7122/73

Int. Cl.² C07C 47/20

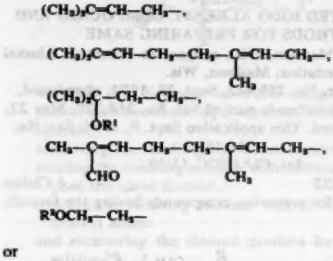
U.S. Cl. 260—601 R 9 Claims

1. A process for the manufacture of unsaturated compounds of the general formula



(I)

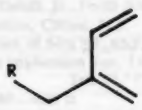
wherein R represents the ethyl group of a grouping of the formula



or

in which R^1 represents a hydrogen atom or a lower alkyl or lower acyl group, R^2 represents a lower alkyl or lower acyl group and R^3 represents a lower alkyl group,

which process comprises treating at 0° to 50°C. a compound of the general formula



(II)

wherein R has the significance given earlier in this claim, or cis-ocimene in the presence of a lower aliphatic alcohol with $Rh(NO_3)_3$, and a carboxylic acid chloride selected from the group consisting of aromatic carboxylic acid chlorides and lower aliphatic carboxylic acid chlorides.

3,962,345

ALKYL PHENYL ETHER DERIVATIVES

Aoki Yukio; Takeuchi Susumu, both of Omiya; Wakita Shizuo; Kato Shoichi, both of Ageo, and Ishida Shuichi, Omiya, all of Japan, assignors to Nippon Kayaku Co., Ltd., Tokyo, Japan

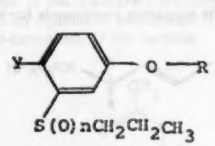
Filed June 25, 1974, Ser. No. 482,861

Claims priority, application Japan, July 19, 1973, 48-82272

Int. Cl.² C07C *147/06, 149/32*

U.S. Cl. 260—607 R **1 Claim**

1. A compound represented by the formula:



wherein Y represents methyl radical or chlorine atom, R represents an alkyl having from 2 to 7 carbon atoms, *n* is an integer of 0 and 1.

3,962,346

1,1-BIS(PERFLUOROALKYLSULFONYL)ETHENES

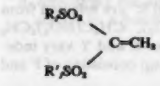
Loren L. Barber, Jr., Woodbury, and Robert J. Koshar, Mahtomedi, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 7, 1975, Ser. No. 556,475

Int. Cl.² C07C *147/02*

U.S. Cl. 260—607 A **4 Claims**

1. A 1,1-bis(perfluoroalkylsulfonyl)ethene of the formula



wherein R_f and R'_f are perfluoroalkyl radicals having 1–18 carbon atoms.

3,962,347

HYDROXYSUBSTITUTED POLYMETHYLOXANONANE

Kurt S. Herz, Perstorp, Sweden, assignor to Perstorp AB, Perstorp, Sweden

Filed Oct. 16, 1973, Ser. No. 406,935

Claims priority, application Sweden, Nov. 23, 1972, 15248/72

Int. Cl.² C07L *41/12*

U.S. Cl. 260—615 R **2 Claims**

1. In a method for recovering pure 3,3,7,7-tetrahydroxymethyl-5-oxanonane from the bottom residue obtained in the production of trimethylolpropane from n-butyraldehyde and formaldehyde in the presence of an alkaline catalyst, said residue containing sodium formate, the improvement comprising mixing the residue with water in a ratio of from 0.5 to 10 parts water per part of residue, stirring the diluted residue until an aqueous solution is obtained, and cooling the solution to a temperature substantially below room temperature to precipitate pure crystals of 3,3,7,7-tetrahydroxymethyl-5-oxanonane, said diluted residue containing from 1 to 20 percent sodium formate calculated on the weight of the whole solution.

3,962,348

ALIPHATIC AND CYCLIC PERFLUORO-ALKYL ETHERS AND PROCESS FOR THE PREPARATION THEREOF

Siegfried Benninger, Schwalbach, Taunus; Thomas Martini, Neuenhain, Taunus, and Siegfried Rebsdat, Neuotting, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

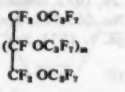
Filed Feb. 7, 1974, Ser. No. 440,567

Claims priority, application Germany, Feb. 9, 1973, 2306494

Int. Cl.² C07L *43/12*

U.S. Cl. 260—615 F **4 Claims**

1. A compound of the general formula



wherein *m* is from 1 to 4.

3,962,349

2,2,2-FLUORODINITROETHYL 2-NITROALKYL ACETALS AND METHODS OF PREPARATION

Horst G. Adolph, Beltsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 26, 1974, Ser. No. 483,258

Int. Cl.² C07C *43/30*

U.S. Cl. 260—615 A **4 Claims**

1. A compound having the formula $ROCH(CH_3)OR'$ wherein $R \neq R'$, but wherein both R and R' are selected from the group consisting of $-CH_2CXY(NO_2)$, $-CH_2C(NO_2)_2CH_3$ and $-CH_2C(NO_2)_2CH_2CF(NO_2)_2$ wherein X and Y vary independently and are selected from the group consisting of F and NO_2.

3,962,350

CONVERSION OF AROMATIC ALDEHYDES TO PHENOLIC COMPOUNDS

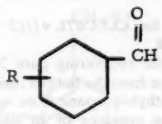
Theodore Horlenko, and James Henry George, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 33,931, May 1, 1970, Pat. No. 3,850,995. This application Aug. 26, 1974, Ser. No. 500,811

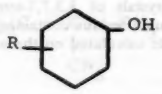
Int. Cl.² C07C *39/06*

U.S. Cl. 260—621 G **9 Claims**

1. A process for converting an aromatic aldehyde of the formula:



to a phenolic compouhd of the formula:



wherein R is a member of the group consisting of hydrogen and methyl groups, which process comprises the steps of:

a. reacting said aldehyde with molecular oxygen by continuously passing a gaseous mixture comprising said aldehyde and oxygen through a reaction zone maintained under at least atmospheric pressure at a temperature between about 250°C and about 450°C to form a gaseous reaction product comprising said phenolic compound; and

b. cooling said reaction product in intimate contact with an inert liquid diluent.

3,962,351

3-SUBSTITUTED IODO ALKENYL COMPOUNDS AND METHODS FOR PREPARING SAME

Charles J. Sih, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 293,442, Sept. 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 255,728, May 22, 1972, abandoned. This application Sept. 9, 1974, Ser. No. 504,164

Int. Cl.² C07C *33/10*

U.S. Cl. 260—633 **1 Claim**

1. 3-hydroxy-1-iodo-1-trans octene.

3,962,352

3-SUBSTITUTED IODO ALKENYL COMPOUNDS AND METHODS FOR PREPARING SAME

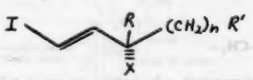
Charles J. Sih, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 293,442, Sept. 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 255,728, May 22, 1972, abandoned. This application Sept. 9, 1974, Ser. No. 504,162

Int. Cl.² C07C *33/10*

U.S. Cl. 260—633 **4 Claims**

1. A method for preparing compounds having the formula



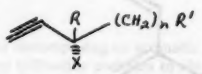
where

R is hydrogen, methyl or ethyl

R' is hydrogen, a saturated hydrocarbon chain containing from 1 to about 9 carbon atoms, pentene, hexene, cyclohexyl or benzyl,

and *n* is an integer from 0 to 5

which comprises reacting one molar equivalent of a compound having the formula



where R, R', X and *n* have the designations set forth above,

with at least one molar equivalent of triisobutylaluminum,

reacting the resulting alkoxide with diisobutylaluminum hydride,

iodinating the resulting hydroalumination product,

treating the resulting mixture with sulfuric acid to decompose the alane formed

treating the resulting mixture with an excess of a basic trialkyl amine,

and recovering the desired product from the reaction mixture.

3,962,353

3-SUBSTITUTED IODO ALKENYL COMPOUNDS AND METHODS FOR PREPARING SAME

Charles J. Sih, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 293,442, Sept. 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 255,728, May 22, 1972, abandoned. This application Sept. 9, 1974, Ser. No. 504,163

Int. Cl.² C07C *33/10*

U.S. Cl. 260—633 **4 Claims**

1. A method for preparing compounds having the formula

where

R is hydrogen, methyl or ethyl

R' is hydrogen, a saturated hydrocarbon chain containing from 1 to about 9 carbon atoms, pentene, hexene, cyclohexyl or benzyl.

X is hydroxyl, and

n is an integer from 0 to 5 which comprises reacting one molar equivalent a compound having the formula

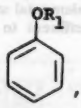
where R, R', X and *n* have the designations set forth above, with two molar equivalents of diisobutylaluminum hydride,
iodinating the resulting hydroalumination product,
treating the resulting mixture with sulfuric acid to decompose the alane formed,
treating the resulting mixture with an excess of a basic trialkyl amine
and recovering the desired product from the reaction mixture.

3,962,354
SYNTHESIS OF CIS-3-HEXEN-1-OL

Robert T. Dahill, Jr., Perth Amboy, N.J., assignor to Givaudan Corporation, Clifton, N.J.

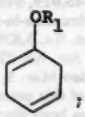
Continuation of Ser. No. 49,544, June 24, 1970, abandoned. This application Jan. 14, 1975, Ser. No. 540,940
Int. Cl.² C07C *29/00*
U.S. Cl. 260—638 R **5 Claims**

1. The process for the preparation of cis-3-hexen-1-ol from a phenyl ether of the formula

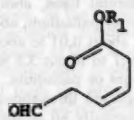


wherein R_1 is lower alkyl of 1–6 carbon atoms, cycloalkyl of 4–8 carbon atoms or phenyl via a sequence of reactions which comprises:

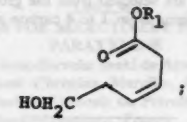
a. 1,4-hydrogenating the aromatic ring of the phenyl ether via a Birch reduction to a 1-alkoxy-1,4-cyclohexadiene of the formula



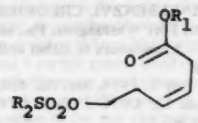
b. selectively oxidatively cleaving the alkoxy substituted 1,2 double bond of the 1-alkoxy-1,4-cyclohexadiene by reacting with an equimolar amount of ozone to provide a 6-oxo-cis-3-hexenoate of the formula



c. selectively reducing the aldehyde group of the 6-oxo-cis-3-hexenoate with sodium borohydride to form a 6-hydroxy-cis-3-hexenoate of the formula



d. esterifying the alcohol group of the 6-hydroxy-cis-3-hexenoate to a 6-sulfonyloxy-cis-3-hexenoate of the formula



wherein R_2 is a lower alkyl of 1–6 carbons, a phenyl, an alkyl phenyl or a napthyl radical; and

e. selectively reducing the 6-sulfonyloxy-cis-3-hexenoate with lithium aluminum hydride to form the cis-3-hexen-1-ol.

3,962,355
METHOD OF PRODUCING DEHYDRATED FRIED SNACK FOOD FROM APPLES

Tatsuo Yamazaki, Matsudo, and Takemi Hayashida, Hino, both of Japan, assignors to Kanro Co. Ltd., Tokyo, Japan

Filed Mar. 27, 1975, Ser. No. 562,586
Int. Cl.² A23B *7/02*, *7/08*
U.S. Cl. 426—639 **6 Claims**

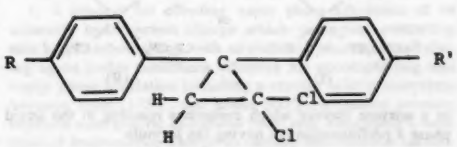
1. A method of producing a food product which comprises:
a. cutting apples into pieces;
b. soaking said pieces in sugar syrup;
c. draining excess syrup from said pieces;
d. drying the drained pieces to a moisture content of 6 % to 8 % while in contact with hot air;
e. frying the dried pieces at a reduced pressure of 0 to 160 mm Hg; and
f. cooling the fried pieces at said pressure until they harden.

3,962,356
SUBSTITUTED CYCLOPROPANES

George Holan, Brighton, Australia, assignor to Monsanto Chemicals Limited, Australia

Division of Ser. No. 92,235, Nov. 23, 1970, Pat. No. 3,857,956, which is a division of Ser. No. 834,177, June 17, 1969, Pat. No. 3,642,910, which is a continuation-in-part of Ser. No. 684,554, Nov. 20, 1967, abandoned, which is a continuation of Ser. No. 402,949, Oct. 9, 1964, abandoned. This application Aug. 15, 1974, Ser. No. 497,776
Claims priority, application Australia, Oct. 24, 1963, 36877/63
Int. Cl.² C07C *25/18*
U.S. Cl. 260—649 R **3 Claims**

1. A compound of the formula



wherein R and R′ are selected from the group consisting of alkyl groups containing from 1 to 4 carbon atoms inclusive.

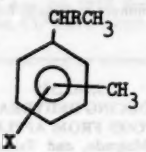
3,962,357

PROCESS FOR THE PREPARATION OF SUBSTITUTED VINYLBENZYL CHLORIDE

Richard F. Merritt, Fort Washington, Pa., and Clark R. Carpenter, Berlin, N.J., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed July 1, 1974, Ser. No. 484,634
Int. Cl.² C07C 25/24, 17/14
U.S. Cl. 260—651 R 12 Claims

1. A continuous, single step vapor phase process for the preparation of a substituted vinylbenzyl chloride which comprises contacting a substituted ethyl toluene of the formula:



wherein R is a substituent selected from the group consisting of hydrogen, chlorine, bromine and (C_1–C_4)alkyl; X is a substituent selected from the group consisting of hydrogen, (C_1–C_4)alkyl, halogen, cyano, aryl, hydroxy, carboxy, and OY groups wherein Y is an aryl group, as a vapor with chlorine at a temperature of between 250°C. and 750°C., condensing the organic reaction product and separating the halogenated reaction product from by-products formed therewith.

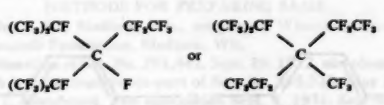
3,962,358

PROCESS FOR PREPARING PERFLUORONONANES

Sigmar-Peter von Halasz, Kelkheim, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

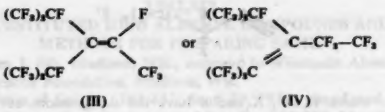
Filed June 20, 1974, Ser. No. 481,460
Claims priority, application Germany, June 23, 1973, 2332097; Mar. 2, 1974, 2410028
Int. Cl.² C07C 19/08, 17/04
U.S. Cl. 260—653 9 Claims

4. A process for preparing a perfluorononane having the formula



(I) (II)

or a mixture thereof which comprises reacting in the liquid phase a perfluorononene having the formula



(III) (IV)

or a mixture thereof with fluorine gas at a temperature from −40° to +120°C.

3,962,359

HYDROPROCESSING OF HYDROCARBONS

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 443,046, Feb. 15, 1974, Pat. No. 3,900,386, which is a continuation-in-part of Ser. No. 365,782, May 31, 1973, Pat. No. 3,839,193, which is a continuation-in-part of Ser. No. 27,457, April 10, 1970, abandoned. This application Feb. 21, 1975, Ser. No. 551,789
Int. Cl.² C07C 5/10
U.S. Cl. 260—667 4 Claims

1. A process for producing a cycloparaffinic hydrocarbon which comprises contacting hydrogen and an aromatic hydrocarbon in a reaction zone at conditions selected to effect chemical consumption of hydrogen in contact with a catalytic composite of a platinum or a palladium component, an iridium component, a germanium component and a porous carrier material, substantially all of the platinum or palladium component and the iridium component being in the elemental metallic state and the germanium component being in an oxidation state above that of the elemental state, and separating the resulting reaction zone effluent to recover said paraffinic hydrocarbon.

3,962,360

ALKYLAROMATIC ISOMERIZATION PROCESS

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 445,019, Feb. 22, 1974, Pat. No. 3,919,340, which is a continuation-in-part of Ser. No. 365,782, May 31, 1973, Pat. No. 3,839,193, which is a continuation-in-part of Ser. No. 27,457, April 10, 1970, abandoned. This application Mar. 5, 1975, Ser. No. 555,496
The portion of the term of this patent subsequent to Oct. 1, 1991, has been disclaimed.
Int. Cl.² C07C 5/30
U.S. Cl. 260—668 A 14 Claims

1. A process for isomerizing an isomerizable alkylaromatic hydrocarbon which comprises contacting said isomerizable alkylaromatic hydrocarbon at isomerization conditions, with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 weight percent platinum or palladium, about 0.01 to about 2 weight percent iridium, about 0.01 to about 5 weight percent germanium and about 0.1 to about 3.5 weight percent halogen, wherein the platinum or palladium, iridium and germanium are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum or palladium and iridium are present in the corresponding elemental metallic states and wherein substantially all of the germanium is present in an oxidation state above that of the elemental metal.

3,962,361
PROCESS FOR ALKYLATING AROMATIC HYDROCARBONS

George E. Stridde, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

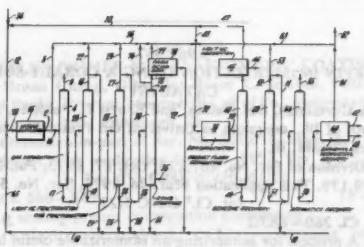
Continuation-in-part of Ser. No. 503,985, Sept. 6, 1974. This application Dec. 6, 1974, Ser. No. 530,088
Int. Cl.² C07C 3/52
U.S. Cl. 260—671 C 21 Claims

1. In a process for alkylating in the liquid phase an alkylatable aromatic hydrocarbon with an olefin-acting compound selected from the group consisting of mono-olefins, alkyl bromides, alkyl chlorides, and mixtures thereof, the improvement which comprises contacting said hydrocarbon and said compound under anhydrous alkylating conditions with a catalyst comprising a synthetic saponite-type mineral in which the central octahedral layer contains one or more divalent cations selected from the group consisting of Mg, Ni, Co, Zn, Mn, Cu, and mixtures thereof, provided that the octahedral layer contains less than 95 mole percent Mg, containing a metallic cation having a Pauling electronegativity greater than 1.0 in cation exchange positions on the surface of said mineral.

3,962,362
METHOD FOR PREPARING POLYPHENYLS

Robert M. Suggitt, Wappingers Falls, N.Y., assignor to Texaco Development Corporation, New York, N.Y.

Filed Mar. 31, 1975, Ser. No. 563,754
Int. Cl.² C07C 15/12
U.S. Cl. 260—668 R 13 Claims



1. The method which comprises hydroalkylating a charge monocyclic aromatic hydrocarbon stream with a hydroalkylating quantity of hydrogen in the presence of hydroalkylation catalyst at hydroalkylation conditions thereby forming a hydroalkylate product stream containing naphthenyl benzenes; dehydrogenating, in the presence of dehydrogenating catalyst at dehydrogenation conditions, a dehydrogenation charge stream containing at least a portion of the naphthenyl benzenes in said hydroalkylate product and at least one diluent-carrier selected from the group consisting of benzene, cyclohexylbenzenes, methylcyclopentane, cyclohexane, toluene, xylene, and mixtures thereof, thereby forming a dehydrogenated product stream containing polyphenyls in diluent-carrier, said diluent-carrier being of lower molecular weight than said product polyphenyls; and recovering said polyphenyls from said dehydrogenated product stream.

3,962,363
PROCESS FOR SELECTIVELY PRODUCING PARAXYLENE

Albert Mabille, Saint-Servais; Inaki de Aguirre, Heverlee, both of Belgium, and Christian Marcilly, Montesson, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Sept. 25, 1974, Ser. No. 509,147
Claims priority, application France, Sept. 27, 1973, 73.34746
Int. Cl.² C07C 3/52, 3/62
U.S. Cl. 260—671 M 14 Claims

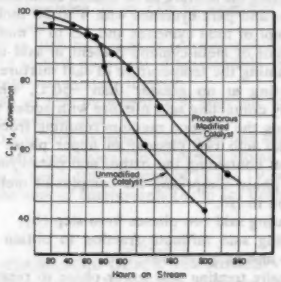
1. A process for producing xylenes of high paraxylene content, comprising reacting, in the vapor phase, a charge containing: (a) toluene, (b) methanol, and, (c) at least one polymethylbenzene containing at least 10 carbon atoms (C_{10}^+) and comprising at least 4 methyl groups fixed on the benzene ring, and the polymethylbenzene is tetramethylbenzenes, pentamethylbenzenes, hexamethylbenzenes or mixtures thereof, the molar composition of the said charge being 20 to 95 % of toluene, 2 to 60 % of methanol and 2 to 60 % of C_{10}^+ polymethylbenzenes, in the presence of an acid catalyst selected from the zeolites having pore diameters of at least 7.5 A.

8. A process for producing xylenes of high paraxylene content, comprising a first step of reacting in the vapor phase, a charge containing (a) methanol and (b) at least one trimethylbenzene, the molar composition of the said charge being 5 to 90 % of methanol and 10 to 95 % of trimethylbenzenes, in order to obtain at least one C_{10}^+ polymethylbenzene, wherein the polymethylbenzene is tetramethylbenzenes, pentamethylbenzenes and hexamethylbenzenes, or mixtures thereof, and a second step, of reacting, in the vapor phase, toluene with at least one C_{10}^+ polymethylbenzene compound obtained in the first step, the molar composition of the feed charge for the reaction of toluene with at least one polymethylbenzene being 40 to 98 % of toluene and 2 to 60 % of polymethylbenzenes, in the presence of an acid catalyst selected from the zeolites having pore diameters of at least 7.5 A.

3,962,364
ALKYLATION IN PRESENCE OF PHOSPHORUS-MODIFIED CRYSTALLINE LUMINOSILICATE CATALYST

Lewis Brewster Young, Kendall Park, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 28, 1975, Ser. No. 563,286
Int. Cl.² C07C 3/52
U.S. Cl. 260—671 C 20 Claims



1. A process for effecting vapor phase alkylation of an aromatic hydrocarbon charge which comprises contacting said hydrocarbon charge with an olefinic hydrocarbon alkylating agent under conditions effective for accomplishing said vapor phase alkylation including a reactor inlet temperature between about 575°F. and about 900°F., a reactor pressure between atmospheric and about 3000 psig, employing a mole ratio of hydrocarbon charge to olefinic hydrocarbon alkylat-

ing agent in the approximate range of 1:1 to 30:1 and a weight hourly space velocity between about 2 and 2000 in the presence of a catalyst comprising a crystalline aluminosilicate zeolite, said zeolite having a silica to alumina ratio of at least about 12, a constraint index within the approximate range of 1 to 12, said catalyst having been modified by the addition thereto of phosphorus in an amount of at least about 0.5 percent by weight.

3,962,365
PROCESS FOR PRODUCING A MIXTURE OF ISOPROPYLNAPHTHALENES

Robert M. Gaydos, Export; Leonard F. Guziak, Monroeville, and Robert W. Maxwell, Jr., Pittsburgh, all of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed May 28, 1975, Ser. No. 581,553
Int. Cl.² C07C *3/54*
U.S. Cl. 260—671 P **2 Claims**

1. In a process for producing a mixture of isopropylnaphthalenes wherein naphthalene is reacted with propylene in the presence of a naphthalene sulfonic acid catalyst the Improvement which comprises:

a. treating naphthalene with concentrated sulfuric acid in an amount of at least 3% based on the amount of naphthalene and at a temperature in the range of 150°to 200°C at atmospheric pressure whereby a mixture containing naphthalene sulfonic acids and naphthalene is produced, and

b. adding propylene to the mixture at a temperature in the range of 150°–220°C at atmospheric pressure whereby an alkylate is produced containing monosubstituted and polysubstituted isopropylnaphthalenes and naphthalene.

3,962,366
ISOMERIZATION AND SEPARATION OF CYMENES FROM MIXTURES CONTAINING SAME

Gaston Henrich, Saint-Avold, and Philippe Gillet, Creutzwald, both of France, assignors to Societe Chimique des Charbonnages, Courbevoie, France

Filed Aug. 5, 1974, Ser. No. 495,000
Claims priority, application France, Aug. 9, 1973, 73.29188
Int. Cl.² C07C *7/01, 15/02*
U.S. Cl. 260—674 A **9 Claims**

4. In a process for isomerizing and separating the ortho-, meta- and para-cymenes from mixtures containing said compounds by bringing a mixture of said compounds in contact with HF and BF_3 at low temperatures so as to form a preferential complex with meta-cymene, the improvement comprising:

a. contacting the mixture to be treated containing the ortho-, meta- and para-cymenes with 4 to 50 mols of HF for each mol of total cymenes and 1.5 to 3 mols of BF_3 for each mol of meta-cymene present in said mixture, and maintaining the temperature of said mixture during said contacting at no greater than −50°C, while simultaneously contacting said mixture with added toluene;

b. allowing the reaction medium resulting from step (a) to separate into two phases, an upper phase or raffinate fraction containing the ortho- and para-cymenes, and a lower phase comprising the complex of meta-cymene in solution in HF;

c. separating said two phases from step (b);

d. distilling said raffinate fraction to obtain the desired ortho- and para-cymenes; and

e. thermally treating said lower phase to recover said HF and BF_3 and recycling the mixture of cymene isomers so obtained.

5. In a process for isomerizing and separating the ortho-, meta- and para-cymenes from mixtures containing said compounds by bringing a mixture of said compounds in contact with HF and BF_3 at low temperatures so as to form a preferential complex with meta-cymene, the improvement comprising:

a. contacting said mixture of ortho-, meta- and para-cymenes with 4 to 50 mols of HF for each mol of total cymenes and 0.5 to 1 mol of BF_3 for each mol of meta-cymene in said mixture, said contacting being carried out at a temperature between −5°C and about −45°C, and in the presence of added toluene;

b. allowing the reaction medium resulting from step (a) to separate into two phases, an upper phase of raffinate fraction containing the ortho- and para-cymenes, and a lower phase comprising the complex of meta-cymene in solution in HF;

c. separating said two phases from step (b);

d. distilling said raffinate fraction to obtain ortho- and para-cymenes;

e. contacting said lower phase comprising the complex of meta-cymene in solution in HF with di-isopropyl-toluene at a temperature not greater that −40°C and thereby obtaining two phases, an upper phase containing the meta-cymene and a complex lower phase containing the di-isopropyl-toluene;

f. recovering the meta-cymene from said upper phase and

g. thermally treating said lower phase of the complex to recover said HF and said BF_3.

8. In the process for isomerizing and separating the ortho-, meta- and para-cymenes from mixtures containing said compounds by putting said mixtures into contact with HF and BF_3 at low temperatures so as to form a preferential complex with meta- cymene in the presence of toluene, the improvement comprising

contacting the mixture to be treated at a temperature of −60°C with 20 mols of HF and 3 mols of BF_3 per mol of m-cymene in the presence of toluene,

separating the two resulting phases after decantation, the upper phase containing o- and p-cymenes and substantially no m-cymene and the lower phase containing substantially all the m-cymene, and

thermally decomposing the lower phase in the presence of toluene, whereby the m-cymene is partially isomerized into o- and p-cymenes which can be treated again as the said to be treated mixture.

3,962,367
OLEFIN ISOMERIZATION USING A COBALT-SULFUR CATALYST

Dalia Germanas, Des Plaines, and Ernest L. Pollitzer, Skokie, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 407,125, Oct. 17, 1973, Pat. No. 3,898,179. This application Mar. 24, 1975, Ser. No. 561,455
Int. Cl.² C07C *5/22*
U.S. Cl. 260—683.2 **3 Claims**

1. A process for isomerizing an isomerizable olefin by shifting the olefinic bond therein which comprises contacting said olefin at olefin isomerization conditions with a catalyst composite of a sulfur component and from about 5 to about 80 weight percent of a cobalt component with a porous carrier material, said catalyst containing less than about 1 mole and more than about 0.55 mole of said sulfur component per mole of said cobalt component, calculated as the elemental metal, said catalyst having been prepared by the steps of:

a. forming an initial composite of said cobalt component and said carrier material, said cobalt component being present in the initial composite as the elemental metal or the oxide;

b. sulfiding said initial composite by contacting same with a sulfide-yielding compound at sulfiding conditions to provide a sulfided composite containing at least about 1 mole of sulfur per mole of said cobalt component in the sulfided composite; and,

c. stripping sulfur from the resulting sulfided composite with a hydrogen-containing gas at stripping conditions, sufficient sulfur being stripped from said sulfided composite to provide a sulfur content in said catalyst of less than about 1 mole and more than about 0.55 mole of sulfur per mole of said cobalt component in the catalyst.

3,962,368

LINEAR POLYESTER MOLDING COMPOSITION CONTAINING CROSS-LINKED LINEAR POLYESTER AS A NUCLEATING AGENT

Walter Herwig, Neuenhain, Taunus, and Rudolf Kern, Mainz, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 253,196, May 15, 1972, Pat. No. 3,843,615. This application May 14, 1974, Ser. No. 469,911
Claims priority, application Germany, May 17, 1971, 2124336
Int. Cl.² C08G 45/14, 39/10
U.S. Cl. 260—835 18 Claims

1. A thermoplastic polyester molding composition consisting of a physical mixture of

a. a linear saturated polyester of one or more aromatic dicarboxylic acids which may contain up to 10% by weight, based on the total weight of dicarboxylic acids, of aliphatic dicarboxylic acids, with saturated aliphatic or cycloaliphatic diols, and

b. 0.05 to 2% by weight, based on the weight of the linear saturated polyester (*a*), of a cross-linked saturated polyester of (1) terephthalic acid or an ester-forming derivative thereof, (2) a diol having from 2 to 10 carbon atoms and (3) 0.01 to 3% by weight, based on the weight of the cross-linked saturated polyester, of a cross-linking compound which is a 1,2-epoxide having at least two epoxide groups,

3,962,369

SEALER-PRIMER FOR ELASTOMERIC COATINGS

Wen-Hsuan Chang, Gibsonia; Roger L. Scriven, Pittsburgh, and Paul J. Prucnal, Monroeville, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 361,016, May 16, 1973, abandoned. This application Dec. 19, 1974, Ser. No. 534,405
Int. Cl.² C08L 61/20, 61/26
U.S. Cl. 260—849 10 Claims

1. A sealing-primer composition comprising:

A. a hydroxyl-containing, carboxyl-containing reaction product of:

1. an ungelled, hydroxy-containing urethane reaction product of an organic polyisocyanate and a polyhydric material, said reaction being terminated when the intrinsic viscosity of the reaction product is 1.0 deciliter per gram or less and the NCO/OH equivalent ratio being less than 1, with the major portion of said polyhydric material being selected from the group consisting of polyether polyols, saturated polyester polyols and mixtures thereof, wherein said polyhydric material contains no more than about 1 gram-mole of compounds having a functionality of 3 or more per 500 grams of polyhydric material, said urethane reaction product having a hydroxyl value of between about 10 and about 200; and

2. 0.1 to about 10 percent by weight based on total weight of the reaction mixture of a compound selected from the group consisting of polycarboxylic acids and polycarboxylic acid anhydrides; the acid and anhydride groups reacting with the hydroxyl groups of the urethane product to form a hydroxyl-containing, carboxyl-containing reaction product, and

B. an amine-aldehyde condensation product.

3,962,370

SHAPED POLYMERIC ARTICLES

Francis Gowland Hutchinson, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 203,067, Nov. 29, 1971, abandoned. This application Sept. 17, 1974, Ser. No. 506,778
Claims priority, application United Kingdom, Dec. 11, 1970, 58947/70
Int. Cl.² C08L 75/04
U.S. Cl. 260—859 R 18 Claims

1. A process for the preparation of a shaped polymeric article which comprises reacting a mixture consisting essentially of of (i) from 1% to 60% by weight of the precursors of a cross-linked polymeric material consisting essentially of at least one polymer having a Tg of not more than 25°C, a molecular weight of at least 3,000 and which contains hydroxyl groups and at least one polyisocyanate cross-linking agent, and (ii) from 99% to 40% by weight of at least one vinyl monomer which is free of groups which react with said hydroxylcontaining polymer or said polyisocyanate, to produce an article of a cross-linked polymeric material having a Tg of not more than 25°C and a vinyl polymer, and shaping the mixture while it is still fluid, the precursors of the cross-linked polymeric material being soluble in or dispersed in the vinyl monomer, and in which the reaction of the polymer with the cross-linking agent is substantially completed before polymerization of the vinyl monomer is allowed to proceed to the extent that the vinyl polymer so produced forms a separate phase.

3,962,371

WEATHER-RESISTANT THERMOPLASTS

Heinrich Alberts, Cologne; Herbert Bartl, Odenthal-Hahnenberg; Richard Prinz, Leverkusen; Salah Elabd Elghani, and Winfried Fischer, both of Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Dec. 6, 1974, Ser. No. 530,171
Claims priority, application Germany, Dec. 12, 1973, 2361717
Int. Cl.² C08L 51/04, 23/08, 23/14
U.S. Cl. 260—876 R 12 Claims

1. A composition of

A. 10 to 90% by weight of a copolymer of

I. 10 to 85% by weight of acrylonitrile, methacrylonitrile or a mixture thereof and

II. 10 to 90% by weight of at least one aromatic vinyl compound, the sum of components I to II being 100 and

B. 10 to 90% by weight of a graft copolymer of

III. 10 to 70% by weight of an ethylene/vinyl ester copolymer containing 25 to 75% by weight of grafted vinyl ester and

IV. 90 to 30% by weight of polymerized units of

a. 15 to 85% by weight of acrylonitrile, methacrylonitrile or a mixture thereof,

b. 85 to 15% by weight of at least one aromatic vinyl compound and

c. 0.1 to 10% by weight of at least one aliphatic monoolefin containing 2 to 18 carbon atoms, the sum of A + B being 100, the sum of III and IV being 100 and the sum of components (*a*) to (*c*) being 100.

3,962,372

STABILIZED QUICK SET ADHESIVES

Richard James Arhart, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 14, 1975, Ser. No. 540,846
Int. Cl.² C08L 23/34; C08F 255/02
U.S. Cl. 260—878 R 10 Claims

1. A composition comprising a solution having a Brookfield viscosity of between about 2000 centipoise and about 150,000 centipoise of a chlorosulfonated polyethylene in at least one monomer selected from the class consisting of acrylic or meth-

acrylic monomers, and 0.01 to 10 parts by weight of the composition of a polymerization catalyst selected from the class consisting of organic peroxides and organic hydroperoxides, and 0.01 to 10 parts by weight of the composition of 2,6-di-t-butyl-4-methylphenol, the weight ratio of said polymerization catalyst to said 2,6-di-t-butyl-4-methylphenol being within the range of about 1 to 1 to 4 to 1, said chlorosulfonated polyethylene containing about 25 to 70 weight percent chlorine, and about 3 to 160 millimoles of sulfonyl chloride moiety per 100 g. of polymer, and being made from polyethylene having a melt index in the range of about 0.1 to 500 g/10 minutes.

3,962,373
COMPOSITIONS OF 3,3,3-TRIFLUORO-2-TRIFLUOROMETHYL PROPENE/VINYLIDENE FLUORIDE COPOLYMER AND POLYTETRAFLUOROETHYLENE

Frank Petrucelli, Parsippany-Troy Hills, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 21, 1974, Ser. No. 516,712
Int. Cl.² C08L 27/16, 27/18
U.S. Cl. 260—900 10 Claims

1. A blended composition in powder form comprising from about 25 to about 99 weight percent of a copolymer of 3,3,3-trifluoro-2-trifluoromethyl propene and vinylidene fluoride and from about 75 to about 1 weight percent of a low molecular weight, particulate polytetrafluoroethylene resin having a maximum particle size of about 15μ and a melt index of about 0.5 to 20.

3,962,374
METHOD OF PREPARING STABLE CONDENSATION PRODUCTS BY SOLVENT EXTRACTION AND PRODUCTS FORMED BY THE PROCESS

Kyung S. Shim, Irvington, and Edward N. Walsh, New City, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 5, 1974, Ser. No. 494,427
Int. Cl.² C07F 9/09, 9/40
U.S. Cl. 260—928 13 Claims

1. A process for forming a stabilized product which is adapted to be used in a polyurethane foam which comprises extracting a crude condensation product derived from condensing a β-haloalkyl ester of a pentavalent phosphoric acid with itself or with an alkyl ester of pentavalent phosphoric acid with at least one inert organic solvent which will solubilize and thereby remove medium molecular weight phosphorus oligomers contained in said crude product and evaporating said solvent to recover the extracted stabilized product.

12. The product formed by using the process of claim 1.

3,962,375
POLYMERIZATION PROCESS

Morford C. Throckmorton; Ken W. Donbar, and Karl C. Kauffman, all of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 424,389, Dec. 13, 1973, abandoned. This application Apr. 11, 1975, Ser. No. 567,443
Int. Cl.² C08F 4/06, 4/12
U.S. Cl. 526—335 8 Claims

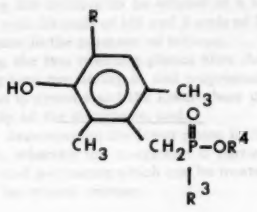
1. A process for the polymerization of butadiene and butadiene in mixture with other diolefins to form polymers containing a high proportion of butadiene units in the cis-1,4-configuration comprising contacting at least one monomer from the group of butadiene and butadiene in mixture with other diolefins with a catalyst consisting essentially of (1) an organoaluminum compound selected from the group consisting of trialkylaluminums, dialkylaluminum hydrides and lithium aluminum tetraalkyl, (2) an organonickel compound selected from the class consisting of nickel salts of carboxylic acids, organic complex compounds of nickel tetracarbonyl and (3) a fluoride compound selected from the group of hydrogen fluoride and its complexes formed with ketones, aldehydes, esters, nitriles and ethers; and boron trifluoride and its complexes formed with ketones, aldehydes, esters, nitriles and ethers, wherein the improvement lies in that said catalyst is preformed by mixing the catalyst components in the presence of a preformed agent selected from the group consisting of trans-2-butene, mixed cis- and trans-2-pentene, cis-2-pentene, methyl acetylene, ethyl acetylene, 2-butyne, 1-pentyne, 2-pentyne, phenyl acetylene and isobutyl vinyl ether.

3,962,376
2,4,6-TRIALKYL-3-HYDROXYPHENYLALKANE PHOSPHONATES AND PHOSPHINATES

John D. Spivack, Spring Valley, and Martin Dexter, Briarcliff, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 400,602, Sept. 25, 1973, abandoned. This application July 22, 1974, Ser. No. 491,074
Int. Cl.² C07F 9/40
U.S. Cl. 260—953 5 Claims

1. A compound of the formula



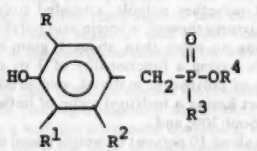
wherein R is alkyl of 4 to 8 carbon atoms, R^3 is alkoxy of 12 to 24 carbon atoms, and R^4 is alkyl of 12 to 24 carbon atoms.

3,962,377
2,3,5-TRIALKYL-4-HYDROXYBENZYLPHOSPHONATES AND PHOSPHINATES

John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 400,601, Sept. 25, 1973, abandoned. This application July 26, 1974, Ser. No. 492,089
Int. Cl.² C07F 9/40
U.S. Cl. 260—953 9 Claims

1. A compound of the formula



wherein R is alkyl of 4 to 8 carbon atoms, R^1 and R^2 are methyl or together are a butylene chain which, together with the phenyl group, forms a tetrahydronaphthyl group, R^3 is alkoxy of 4 to 24 carbon atoms and R^4 is alkyl of 4 to 24 carbon atoms.

3,962,378

PREPARATION OF PHOSPHORUS-ORGANIC ESTERS

Manfred Finke, Fischbach, Taunus, and Hans-Jerg Kleiner, Bad Soden, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

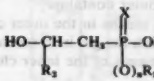
Filed July 8, 1974, Ser. No. 486,315

Claims priority, application Germany, July 14, 1973, 2335852

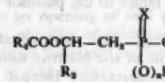
Int. Cl.² C07F 9/32, 9/40

U.S. Cl. 260—968 15 Claims

1. A process for preparing a 2-hydroxyethanephosphonic acid diester, a 2-hydroxyethyl-phosphinic acid ester, a 2-hydroxyethane-thiophosphonic acid diester or a 2-hydroxyethyl-thiophosphinic acid ester of the formula



wherein R_1 is an alkyl or a substituted alkyl of up to 18 carbon atoms, R_2 is an alkyl or a substituted alkyl of up to 18 carbon atoms, a cycloalkyl or a substituted cycloalkyl of up to 10 carbon atoms, an alkenyl or a substituted alkenyl of up to 18 carbon atoms, an aryl or a substituted aryl of up to 14 carbon atoms, or an aralkyl or substituted aralkyl of up to 15 carbon atoms, R_3 is hydrogen, alkyl or substituted alkyl of up to 18 carbon atoms, an alkenyl or substituted alkenyl of up to 18 carbon atoms, a cycloalkyl or substituted cycloalkyl of up to 10 carbon atoms, an aryl or a substituted aryl of up to 14 carbon atoms, or an aralkyl or a substituted aralkyl of up to 15 carbon atoms, X is oxygen or sulfur and n is 0 or 1, which comprises heating at a temperature between about 25°C. and about 150°C. a 2-acyloxy compound of the formula



wherein R_4 is an alkyl of 1 to 4 carbon atoms, in an alcohol of the formula ROH having 1 to 4 carbon atoms containing from about 0.1 to about 25 mol percent of a strong acid or from about 1 to about 15 mol percent of a strong base, said mol percent being calculated on the basis of said 2-acyloxy compound, to form said ester or diester and an ester of the formula R_4COOR, and removing said ester of the formula R_4COOR from the reaction mixture.

3,962,379

CARBURETOR COLD ENRICHMENT SYSTEM HAVING AUTOMATIC CHOKE OPENER AND FAST IDLE CAM HIGH STEP PULLOFF APPARATUS

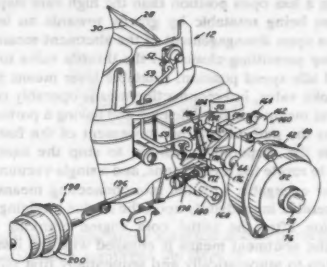
Richard J. Freismuth, Mount Clemens, and Joseph F. Lopiccola, Warren, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sept. 30, 1975, Ser. No. 618,298

Int. Cl.² F02M 1/10

U.S. Cl. 261—39 B 4 Claims

1. A carburetor having an air/fuel induction passage open at one end to air at essentially atmospheric pressure and connected at its opposite end to an engine intake manifold to be subject to the changing vacuum levels therein, the one end having a choke valve rotatably mounted for movement across the passage between a closed air choking position and an open inoperative position, and a throttle valve rotatably mounted posterior of the choke valve for movement across the passage between a normal essentially closed engine idle speed position and beyond towards a wide open throttle position to control the quantity of air/fuel mixture flow through the passage, an abutment means rotatable with the throttle valve, a rotatable fast idle cam having a high cam step projecting radially from the cam axes for engagement at times by the abutment means during movement of the throttle valve in a closing direction to stop the throttle valve in a more open position than the idle speed position to increase mixture flow to the manifold, the cam also having a second cam step of lesser radial extent engagable with the abutment means at other times as a function of the rotative position of the cam to stop the throttle valve in a less open position than the high cam step position, the cam being rotatable by gravity towards an inoperative position upon disengagement of the abutment means with the cam steps permitting closure of the throttle valve to the normal idle speed position, rotatable lever means secured to the choke valve and having a portion extending into the path of rotative movement of the fast idle cam towards the inoperative position to stop the cam rotation, means to rotate the lever means, and vacuum mechanical control means operable



during cold engine operations while the abutment means is engaged with the fast idle cam high step to automatically both open the choke valve and rotate the fast idle cam to a position disengaging the abutment means from the high cam step and engaging it with the second cam step to lean and reduce the mixture flow to the engine to improve emissions while minimizing engine stalling, the control means including a shaft, means rotatably mounting the fast idle cam and a cam member on the shaft, the cam member having a projecting portion having at times a unidirectional engagement with the cam to rotate the same towards its inoperative position, and a vacuum servo connected to the cam member and operable to rotate the cam member against the cam to rotate the same off the high cam step engagement with the abutment means and also engage and rotate the lever means projecting portion to open the choke valve.

3,962,380

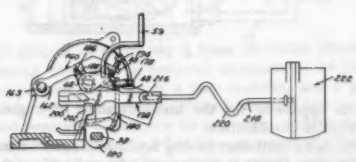
CARBURETOR WITH COMBINED CHOKE PULLDOWN AND FAST IDLE CAM KICKDOWN APPARATUS

Raymond J. Cedar, Dearborn, and Rodney R. Deyo, Westland, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 14, 1975, Ser. No. 622,332

Int. Cl.² F02M 1/10

U.S. Cl. 261—39 B 9 Claims



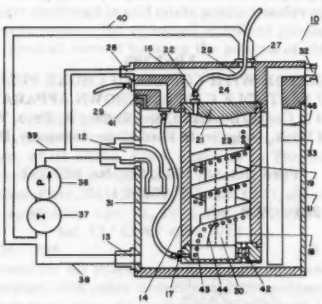
1. A carburetor having an air/fuel induction passage open at one end to air at essentially atmospheric pressure and con-

nected at its opposite end to an engine intake manifold to be subject to the changing vacuum levels therein, the one end having a choke valve rotatably mounted for movement across the passage between a closed air choking position and an open inoperative position, and a throttle valve rotatably mounted posterior of the choke valve for movement across the passage between a normal essentially closed engine idle speed position and beyond towards a wide open throttle position to control the quantity of air/fuel mixture flow through the passage, an abutment means rotatable with the throttle valve, a rotatable fast idle cam having a high cam step projecting radially from the cam axes for engagement at times by the abutment means during movement of the throttle valve in a closing direction to stop the throttle valve in a more open position than the idle speed position to increase mixture flow to the manifold, the cam also having a second cam step of lesser radial extent engagable with the abutment means at other times as a function of the rotative position of the cam to stop the throttle valve in a less open position than the high cam step position, the cam being rotatable by gravity towards an inoperative position upon disengagement of the abutment means with the cam step permitting closure of the throttle valve towards the normal idle speed position, rotatable lever means secured to the choke valve, interconnecting means operably connecting the lever means and fast idle cam and having a portion extending into the path of rotative movement of the fast idle cam towards the inoperative position to stop the cam rotation, means to rotate the lever means, and a single vacuum actuated member engagable with the interconnecting means and cam and operable immediately upon the engine attaining sustained operation after the initial cold engine cranking operation while the abutment means is engaged with the fast idle cam high step to automatically and sequentially first effect movement of the lever means to crack open the choke valve from a closed engine cranking position and subsequently rotate the fast idle cam to a position disengaging the abutment means from the high cam step and engaging the abutment means with the second cam step to lean and reduce the mixture flow to the engine to improve emissions while minimizing engine stalling.

3,962,381
HUMIDIFICATION APPARATUS

Dean T. Farrish, Parker, and Dalton E. Templeton, Denver, both of Colo., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Nov. 11, 1974, Ser. No. 522,528
Int. Cl.[2] G01D *18/00*; A61M *16/00*
U.S. Cl. 261—141 **17 Claims**



1. An apparatus for the humidification of a gas, which comprises in combination:

a. An outer container having liquid recirculation means;

b. An inner chamber, having gas inlet and gas outlet means, a helixal-shaped gas conveying means in gas-tight communication with the inner wall of the chamber, having an axial liquid conduit there through, and adapted to convey gas bubbles upward in a helixal pathway through a liquid in the chamber, a one-way valve at the base of the chamber, communicating with the chamber and the outer container and adapted to maintain a pre-set liquid level in the chamber, a top portion for the chamber having said gas outlet means and a substantially convex inner surface adapted to form a bubble trap;

c. A top cover in sealable engagement with the outer container and the inner chamber having a liquid chamber having liquid inlet means and liquid outlet means, conduit means in the liquid chamber in communication with the gas outlet means of the top portion of the inner chamber, the conduit means in pass-through communication with the liquid outlet means, a gas inlet means communicating with the inner chamber, and a liquid inlet means communicating with the outer container;

d. A second conduit means in the outer container in communication with both the gas inlet means of the top cover and the gas inlet means of the inner chamber.

3,962,382
PROCESS FOR FORMING A POURABLE PLASTISOL NITROCELLULOSE SLURRY

Craig E. Johnson, Indian Head, and Paul F. Dendor, Oxon Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 27, 1974, Ser. No. 500,986
Int. Cl.[2] C06B *21/00*
U.S. Cl. 264—3 E **2 Claims**

1. A method for forming a stable slurry of fine particle plastisol nitrocellulose which comprises:

a. forming a water wet plastisol nitrocellulose which is dried to a water content of up to about 0.6% of water by weight of the plastisol nitrocellulose;

b. adding a suitable liquid to the plastisol nitrocellulose to form a slurry, and

c. subjecting the slurry to high shear agitation, and

b. examining a sample of the plastisol nitrocellulose slurry to determine the pourability thereof, an unpourable slurry indicating that additional drying is necessary.

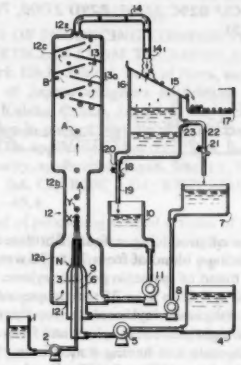
3,962,383
METHOD AND APPARATUS FOR MANUFACTURING SEAMLESS MATERIAL-FILLED CAPSULES

Yoshiro Hagiwara, 1-30-710 Agenaruo, Nishinomiya, Hyogo; Toshiyuki Suzuki, 7-6-104 Higashi Sonoda, Amagasaki, Hyogo, and Akira Imai, 4-20-5 Oimazato Higashinari, Osaka, all of Japan

Filed Apr. 9, 1973, Ser. No. 349,400
Claims priority, application Japan, Oct. 3, 1972, 47-99300
Int. Cl.[2] B29C *13/00*; B29F *5/00*
U.S. Cl. 264—4 **8 Claims**

1. A method of manufacturing seamless material-filled capsules, comprising the steps of jetting a capsule filler material, a sol solution and a water-insoluble solution in the form of a continuous jet of the same core into a hardening solution from a triple-orifice of the same core when the outermost layer (third layer) of said jet, in direct contact with said hardening solution, is a water-insoluble solution so that the spherical formation of the said jet three layers due to interfacial tension can be completed without contacting of said hardening solution and said sol solution directly at the outlet of said triple-orifice, and causing the resultant three-layered spherical drop to strike a plurality of interrupting plates in the hardening solution to destroy and separate said water-insoluble outermost layer so that the sol solution as the intermediate layer (second layer) thus exposed can then react with said hardening solution to form a water-insoluble film on the outer surface of the spherical drop, and controlling and changing the diameter and film thickness of the spherical drop by changing the flow speed of said hardening solution and the diameter of said triple-orifice.

4. An apparatus for manufacturing seamless material-filled capsules, comprising a triple-orifice of the same core consisting of an innermost pipe connected by means of a pipe to a tank for storing a capsule filler material, an intermediate pipe connected by means of a pipe to a tank for storing a sol solution, and an outermost pipe connected by means of a pipe to a tank for storing a water-insoluble solution, all of said innermost, intermediate and outermost pipes being connected to



respective pumps for feeding predetermined amounts of said respective solutions, and a tower containing hardening solution for capsule-drop forming and hardening purposes, in which said triple-orifice is arranged in the lower chamber thereof with the jet opening of said triple-orifice positioned upwardly, and a plurality of interrupting plates for contact with spherical drops from said orifice being provided in the upper chamber of said tower.

3,962,384
SPRAY-DRYING TECHNIQUE FOR PREPARING AGGLOMERATED POWDERS

Marco Alfred Cannalonga, Fort Lee, and Louis Vincent Czarecki, Succasunna, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 242,789, April 10, 1972, abandoned. This application June 26, 1974, Ser. No. 483,343
Int. Cl.² B01J *2/02*
U.S. Cl. 264—7 **10 Claims**

1. In a process for preparing coated agglomerated powders suitable for direct compression tablets comprising:

A. spraying into a spray dryer chamber droplets of a spray-dryable formulation selected from the group consisting of an aqueous vitamin slurry and an aqueous vitamin emulsion, to produce a spray-dried powder thereby, the improvement comprising:

B. metering into said chamber, in a concentration of about 1–5% by weight, based on the weight of said spray-dried powder, a dry particulate absorbent having:

a. a particle size of from about 2 microns to about 16 microns;

b. an oil absorption capacity of from about 150 to about 400 pounds of oil per 100 pounds of absorbent;

c. a surface area of from about 175 to about 360 square meters per gram;

d. insolubility in cold water;

e. resistance to wetting by water;

f. a free-flowing property and

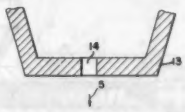
g. ability to not develop static electricity

said absorbent contacting said spray droplets in a semi-dry condition to coat said droplets and form a dry agglomerated powder thereof, wherein said absorbent minimizes the development of static electricity during step A and on the resulting dried agglomerated powder.

3,962,385
METHOD FOR MANUFACTURING SPHERICAL HOLLOW PARTICLES

Itaru Niimi, Nagoya; Kametaro Hashimoto, Toyota; Kenji Ushitani, Toyota; Masashi Shibata, Toyota, and Yoshitaka Takahashi, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed July 16, 1973, Ser. No. 379,828
Claims priority, application Japan, July 17, 1972, 47-71447
Int. Cl.² B01J *2/02*
U.S. Cl. 264—11 **8 Claims**



1. Method of manufacturing spherical hollow particles from molten metal which comprises the steps of

a. ejecting a flow of water at a pressure of 5–30 kg/cm² through an annular gap defined between coaxial frusto-conical inner and outer walls, one of which walls is provided with a plurality of slots 0.1–0.5 mm in width and spaced 0.1–1.0 mm apart, to form an inverted cone of jets converging at a common point below said annular gap,

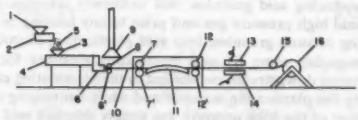
b. dropping a stream of said molten metal through said common point to shatter said stream into hollow metal particles containing entrapped water from said jets, which water is converted to a gaseous state by the heat of said metal so as to expand within said particles, and then

c. cooling said particles until they are solidified in the form of hollow balls.

3,962,386
CORONA DISCHARGE TREATMENT OF FOAM FIBRILLATED WEBS

Gary L. Driscoll, Boothwyn, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.

Filed Jan. 2, 1973, Ser. No. 320,353
Int. Cl.² B29D *27/00*; B29C *25/00*; H05B *7/16*
U.S. Cl. 264—22 **1 Claim**



1. A process of producing a foam fibrillated fibrous web comprising extruding a resinous composition at least 70 weight percent of which is a poly α-olefin, and a gaseous material mixed with said polyolefin from a die into a zone of reduced pressure to produce an extrudate, withdrawing said extrudate from said die by a first take-up means at a linear rate from 2 to 25 times the linear rate at which said polyolefin reaches the die lips to form a foam fibrillated web, stretching said foam fibrillated web from 2 to 10 times in the machine direction, and surface treating the stretched foam fibrillated

web with a corona discharge at an intensity of from 1 to 75 watt-minutes per square foot at about 20 to about 150°C whereby the fibrous web has improved adhesion ability with itself.

3,962,387

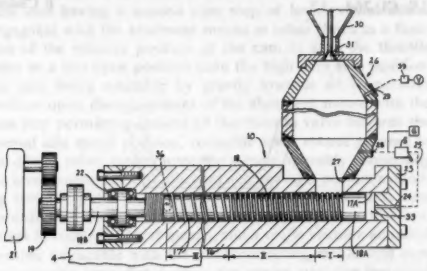
METHOD OF INJECTION MOLDING A FOAMABLE THERMOPLASTIC MATERIAL

James W. Hendry, Louisville, Ky., assignor to Ex-Cell-O Corporation, Troy, Mich.

Division of Ser. No. 233,213, March 9, 1972, Pat. No. 3,806,291. This application July 24, 1973, Ser. No. 382,206

Int. Cl.[2] B29D 27/00

U.S. Cl. 264—50 16 Claims



1. The method of foaming a thermoplastic material comprising the steps:

introducing a quantity of said thermoplastic material in a granular form into a hopper above and communicating through an opening with a plasticating chamber containing a plasticating member consisting of an elongate member rotatable for downstream advancement and plasticating of the thermoplastic material and having an inlet end portion extending past said opening;

maintaining said hopper in communication with said plasticating chamber through said opening while otherwise closing said hopper against gas escape, and permitting said granules to lie loosely in said hopper and in said opening in an unsoftened state;

supplying gas inert to the thermoplastic granules from an external high pressure gas source directly into said closed hopper without prior heating or mechanical compression of the granules and other than through said opening, and uniformly and rapidly penetrating the spaces between the thermoplastic granules lying in said hopper and said opening with said gas under pressure and wherein said gas under pressure is provided as the foaming agent;

preventing external gas entry directly into the plasticating chamber at any point downstream of said opening at all times, but permitting gas from said hopper to enter the plasticating chamber through said opening;

introducing said granules, still uniformly interspaced with said high pressure gas and prior to any heating or softening of such granules, into said plasticating chamber and engaging same by said plasticating member for subsequent downstream movement in the plasticating chamber by the plasticating member and while continuing connection of the high pressure gas supply through said hopper and opening to said plasticating chamber;

initiating and continuing melting said granules in said plasticating chamber by heat generation therein by working and moving the thermoplastic material along the plasticating chamber by rotating of said plasticating member, while maintaining said gasous pressure in said hopper and in the communicating portion of said plasticating chamber at a pressure substantially exceeding the pressure applied to the thermoplastic material by said plasticating member during melting, wherein said gas remains uniformly distributed throughout the material during said melting and upon the completion of said melting the resultant plastic material encases uniformly distributed separate bubbles of said high pressure gas.

3,962,388

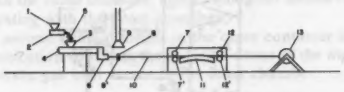
METHOD OF PRODUCING A FOAM FIBRILLATED WEB

Gary L. Driscoll, Boothwyn, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.

Filed Jan. 2, 1973, Ser. No. 320,355

Int. Cl.[2] B29C 25/00; B29D 27/00, 7/24

U.S. Cl. 264—51 4 Claims



1. A process of producing a foam fibrillated fibrous web comprising heating a blend of from 75 to 98 weight percent as based on said blend of isotactic polypropylene having a melt index below 30 and from 2 to 25 weight percent as based on said blend of ethylene-vinyl acetate copolymer containing from 60 to 98 weight percent ethylene and from 2 to 40 weight percent vinyl acetate and having a melt index from 1 to 400 in an extruder to from 175° to 260°C whereby a molten blend is formed, extruding said molten blend and from 0.1 to 20 percent by weight as based on said blend of a material which is gaseous under the extrusion conditions used mixed with said molten blend from a die into a zone of reduced pressure to produce an extrudate, quenching said extrudate to a temperature below about 150°C while withdrawing said extrudate from said die by a first linear take-up means at a linear rate of from 2 to 25 times the linear rate at which said blend reaches the lips of said die whereby the foam cells forming are ruptured and a foam fibrillated web is formed, and stretching said foam fibrillated web from 1.5 to 10 times in the machine direction at a temperature of from about 90°C to about 150°C to increase the strength thereof.

3,962,389

METHOD FOR PRODUCING CERAMICS FROM PARTICLE SHEET MATERIAL USING CATIONIC PULP

Akira Takase; Mitsuo Suzuki; Yoichi Shiraki, all of Tokyo; Katsunori Horachi, Urawa, and Masao Anzai, Funabashi, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1973, Ser. No. 427,633

Claims priority, application Japan, Dec. 28, 1972, 48-1821; Dec. 28, 1972, 48-1822; Dec. 28, 1972, 48-1823; Dec. 28, 1972, 48-2870[U]; Dec. 28, 1972, 48-2871[U]; Feb. 3, 1973, 48-14122

Int. Cl. C04b 35/64

U.S. Cl. 264—56 9 Claims

1. A method for producing ceramics which comprises the steps of:

forming an aqueous solution containing from about 50 to 98 percent by weight of inorganic particles having a negative ζ-potential in water, said inorganic particles being selected from the group consisting of clay, quartz, siliceous sand, china stone, feldspar, pyrophyllite, dolomite, limestone, kaolin, sinterable powdered oxides, powered silicate materials, carbides, nitrides, synthetic minerals of magnetic and dielectic materials, and mixtures thereof, and from about 50 to 2 percent by weight of cationic cellulose pulp having a positive ζ-potential of greater than about +20mV in water, said cationic cellulose pulp beign formed by the graft copolymerization of a cationic monomer to a cellulose pulp;

forming a particle sheet material material from said aqueous solution of said inorganic particles and said cationic cellulose pulp in a sheet forming machine;

heating said particle sheet material in an oxidizing atmosphere in order to burn off the cellulose pulp without sintering said inorganic particles; and

further heating said particle sheet material at elevated temperatures in order to sinter said inorganic particles.

3,962,390

METHOD OF PRODUCING COMPOSITE FOAMED SHAPED ARTICLES FROM THERMOPLASTIC RESINS

Hisayuki Mori; Eiichi Adachi, both of Nara, and Yoji Noguchi, Kyoto, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 97,382, Dec. 11, 1970, abandoned. This application May 21, 1974, Ser. No. 471,997

Claims priority, application Japan, Dec. 11, 1969, 44-99860

Int. Cl.[2] B29C *5/04;* B29D *27/00*

U.S. Cl. 264—45.4 17 Claims

1. A method of producing shaped articles of a thermoplastic resin having a non-foam layer and a foam layer, which consists essentially of mixing thermoplastic resin particles not containing a heat-decomposable blowing agent, said resin being selected from the group consisting of polyethylene, polypropylene resins, styrol resins, acrylonitrile-butadiene-styrene copolymers, vinyl chloride resins, methacrylic resins and acrylonitrile-styrene copolymers and thermoplastic resin particles containing a heat-decomposable blowing agent, said resin being selected from the group consisting of polyethylene resins, polypropylene resins, styrol resins, acrylonitrile-butadiene-styrene copolymers, vinyl chloride resins, methacrylic resins and acrylonitrile-styrene copolymers, said heat-decomposable blowing agent being at least one member selected from the group consisting of dinitropentamethylene-tetramine, dimethyl-dinitrosoterephthalazide, benzene sulfonylhydrazide, toluene sulfonylhydrazide, azobisisobutyronitrile, diazoaminobenzene, trihydrazine-triazine, paratoluenesulfonyl-semicarbazide, oxybisbenzenesulfonyl-semicarbazide and azodicarbonamide, and derivatives thereof, wherein the said thermoplastic resin particles not containing a heat-decomposable blowing agent and said thermoplastic resin particles containing said blowing agent have the following relationship:

$$1000 \geq C_A/C_B \geq 50$$

wherein C_A is the heat capacity of said thermoplastic resin particles containing a heat-decomposable blowing agent and C_B is the heat capacity of said thermoplastic resin particles not containing a blowing agent; introducing the mixture thus obtained into a mold; heating the mold and, in the meantime, moving said particles in said mold to effect the heat-melting of said particles as well as the heat-decomposition of the blowing agent into a gas and thereby forming the non-foam layer derived from said thermoplastic particles not containing the blowing agent and the foam layer derived from said thermoplastic particles containing said blowing agent.

3,962,391

DISC SUPPORT STRUCTURE AND METHOD OF PRODUCING THE SAME

Wolfgang Dietze, Munich; Richard Mittermeier, Moosburg, and Gerhard Steinwagner, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 20, 1974, Ser. No. 452,934

Claims priority, application Germany, May 7, 1973, 2322952

Int. Cl.[2] B29C *13/00, 17/10*

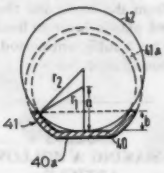
U.S. Cl. 264—81 5 Claims

1. A method of producing a support structure having a flat base and upwardly extending side walls integral with said base for supporting generally upright on edge crystal discs of a given diameter during treatment thereof, comprising:

thermally depositing silicon from a gaseous mixture comprises of a carrier gas and a thermally decomposable gaseous silicon compound onto at least one heated cylindrical carrier member, said carrier member having at least one flattened wall portion so as to form a correspondingly shaped tubular member composed of silicon about said carrier member and which tubular member has a flattened wall portion corresponding to that on said carrier member;

disjoining the deposited tubular member from said carrier member without destroying said tubular member;

forming longitudinal separation cuts in said tubular member through two opposing side wall portions thereof adjacent to said flattened wall portion of the tubular member and along lines parallel to a longitudinal axis of said tubular



member and at a height dimension above said flattened wall portion of the tubular member but below its wall portion located above said flattened wall portion; and

removing the cut-separated portion of the tubular member above said flattened wall portion so as to define a support structure having a flat base corresponding to said flattened wall portion and upwardly extending side walls integral with said flat base and in opposing relation to each other, said side wall having a height dimension (b) which is determined by the relation:

$$b = r_1^2 \pm a^2/2(r_2 \pm a)$$

wherein

a is the distance from the radial center of said tubular member to the flattened wall portion thereof;

r_1 is the dimension of the internal radius of said tubular member; and

r_2 is the dimension of the crystal discs to be supported by the support structure.

3,962,392

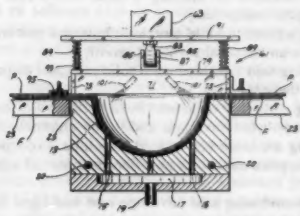
METHODS OF MOLDING MOLDABLE TEXTILE FABRICS

William R. Conner, Jr., Shelbyville, Tenn., assignor to Stahl-Urban Company, Brookhaven, Miss.

Filed Nov. 15, 1974, Ser. No. 524,134

Int. Cl.[2] B29C *17/04, 25/00*

U.S. Cl. 264—89 3 Claims



1. The method of forming thermoformable textile fabric into a permanent three-dimensional shape comprising apply-

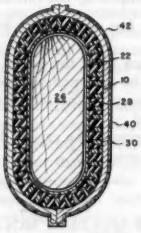
ing a layer of substantially air impervious thermoformable sheet plastic material to one face of the fabric, applying the fabric with the plastic layer thereon to a mold having a cavity conforming to the three-dimensional shape desired with the fabric toward the cavity, heating the plastic layer to thermoforming temperature, applying vacuum to the cavity to draw the plastic layer and the fabric into the cavity thereby to mold the fabric and also said plastic layer to the shape of the cavity, and releasing the vacuum and removing the molded plastic layer with the molded fabric thereon from the mold, and cooling the plastic layer, wherein the mold is heated to heat the fabric to the forming temperature when the fabric is drawn into the cavity and contacts the surface of the mold within the cavity, the vacuum is reduced after the fabric contacts said surface to cause the fabric to withdraw slightly from said surface, the plastic layer is cooled in the cavity while the reduced vacuum is applied to the cavity, the vacuum is then released, and the molded plastic layer and molded fabric are removed together from the mold and the molded fabric retained on the molded plastic layer to hold the molded fabric in its molded shape for a sufficient period of time to stabilize the fabric in its molded shape.

3,962,393

METHOD FOR MAKING A HOLLOW LAMINATED ARTICLE

Leiv H. Blad, Van Nuys, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed May 7, 1974, Ser. No. 467,762
Int. Cl.² B29D *3/02*; B29G *7/00*
U.S. Cl. 264—90 **11 Claims**



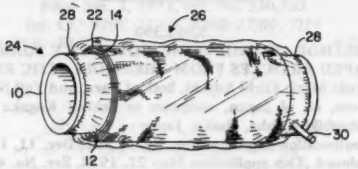
1. The method of making a fiber-reinforced polymeric hollow article comprising:
- forming a flexible mold envelope having a pattern of channels in an external surface thereof;
- supporting said envelope on a solid mandrel disposed internally thereof;
- applying a curable resin and flexible fibrous material about said supported envelope and in the channels thereof;
- enclosing an assembly of said envelope and said mandrel with applied said resin and fibrous material within a rigid die;
- sealably enclosing said envelope and said rigid die to form a sealed enclosure;
- establishing a vacuum in said sealed enclosure while admitting at least atmospheric pressure internally of said envelope in such a way as to form a separation between said envelope and said rigid die; and curing said resin.

3,962,394

METHOD FOR MOLDING FIBER REINFORCED COMPOSITE TUBE

Judge H. Hall, Anaheim, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed June 2, 1975, Ser. No. 583,346
Int. Cl.² B29C *27/10*, *15/00*; B29D *3/02*, *23/00*
U.S. Cl. 264—90 **9 Claims**



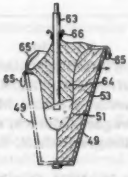
1. The method of molding a fiber-reinforced composite tube comprising the steps of:
- using a mold element having a peripheral molding surface about a central axis of the element;
- applying to said molding surface an annular liquidresin impregnated layer of reinforcing fibers;
- placing a compression sleeve in contact with an exposed side of said fiber-resin layer, said compression sleeve being longitudinally split so that the peripheral length of said sleeve can change with pressure and which sleeve is releasable from said resin; urging said compression sleeve against said fiber-resin layer by gaseous or fluid pressure, in such a way as to cause a change in the peripheral length of said sleeve by sliding one portion of said sleeve upon another portion of said sleeve, to compress the layer between said sleeve and mold element and thereby compact the reinforcing fibers in the layer; and curing the resin in said layer with heat while the layer is so compressed, and removing said sleeve from said layer and said layer from said mold element.

3,962,395

METHOD OF PRODUCING CASTINGS OR OTHER MOULDINGS BY MEANS OF VACUUM SUCTION OF FLEXIBLE CONTAINERS HOLDING GRANULAR MATERIAL

Lars Hägglund, Norrkoping, Sweden, assignor to Landstingens Inkopscentral, Solna, Sweden

Continuation-in-part of Ser. No. 310,420, Nov. 29, 1972, abandoned. This application Dec. 4, 1974, Ser. No. 529,468
Claims priority, application Sweden, Dec. 1, 1971, 15404/71
Int. Cl.² B29C *1/02*
U.S. Cl. 264—91 **4 Claims**



1. In a method of making a contoured mold member corresponding in shape to contours of a model, the steps comprising:
- a. forming a first air-tight chamber by sealing a readily deformable, flexible and extensible member about a pe-

ripheral edge of a container wall, said member including a portion extending beyond confines of said container;

b. placing a model, contours of which are to be reproduced, against said extensible member and causing said extensible member to be partially conformed to said contours;

c. introducing granular material into said chamber through a conduit thereto and causing said member to be conformed further to said contours;

d. evacuating fluid at least partially from said first chamber creating a partial vacuum therein and causing said granular material to stiffen into a persistent shape and causing said extensible member to conform further to said contours;

e. while maintaining said partial vacuum removing said model from contact with said extensible member thereby exposing a surface of said extensible member conformed to said contours of said model, said surface defining a mold cavity;

f. filling said cavity with other granular material;

g. sealing portions of said member, extending beyond confines of said container, to form a second air-tight chamber about said other granular material; and

h. evacuating fluid from said second chamber to form a positive mold member from said other granular material and said extensible member.

3,962,396

PROCESS FOR MANUFACTURING A TRIPLE-WALL CONTAINER

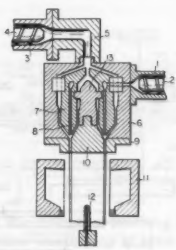
Katuya Ono, Gifu; Koji Kozuka, and Yoshiyuki Komuro, both of Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 7, 1974, Ser. No. 448,965

Claims priority, application Japan, Mar. 13, 1973, 48-28555

Int. Cl.² B29C *17/07*

U.S. Cl. 264—98 **6 Claims**



1. A process for manufacturing a thermoplastic polymer container having a triple-wall structure which comprises melt-extruding a composite plastic tube comprised of three closely adherent tubular laminates, the medial laminate being composed of a mixture of (i) 55 to 97% by weight of polyamide and (ii) 3 to 45% by weight of an ethylene copolymer containing 0.1 to 10% by mole, in polymerized form, of at least one compound selected from the group consisting of metal salts of acrylic acid and methacrylic acid, and the outer and inner laminates being composed of an olefin polymer, while the three independent streams of the polymer melts are joined together within a die such that the thickness of said medial laminate is 2 to 30% based on the total thickness of the three laminates; and then blow-molding the composite plastic tube into the shape of a container.

3,962,397

PRODUCTION OF REFLEXIBLE PIGMENT

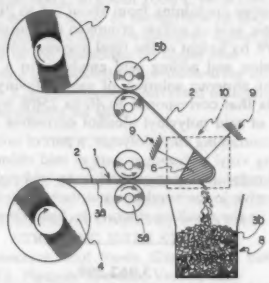
Hiroshi Narui; Ikuo Akune; Terumi Shinohara, all of Kyoto; Masao Numa, Takatsuki, and Yosiya Kobiki, Kyoto, all of Japan, assignors to Oike & Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 295,908, Oct. 10, 1972, abandoned. This application Nov. 6, 1974, Ser. No. 521,507

Claims priority, application Japan, Dec. 22, 1971, 46-104999; Jan. 25, 1972, 47-9655

Int. Cl.² F02M *31/04*

U.S. Cl. 264—144 **17 Claims**



1. A process for making a light reflective pigment which comprises

a. coating a base film with a resinous material;

b. depositing a metal by vapor deposition on the coating;

c. elongating only the base film at least 1% in air to peel the metal coated with the resinous material from the base film; and

d. crushing the resulting coated metal leaf into pieces having a length and width within the range of about 0.1 to about 500 μ each, a thickness of about 0.1 to about 4 μ and a true specific gravity of about 1 to about 2.

3,962,398

PROCESS FOR PRODUCING HEAT RESISTANT MATERIALS

Kazuto Matsuo, Imari; Michiya Araki; Tomoyuki Matsugo, both of Yatsushiro, and Takahito Mikami, Nishinomiya, all of Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

Division of Ser. No. 416,801, Nov. 19, 1973. This application Aug. 21, 1974, Ser. No. 499,156

Claims priority, application Japan, Nov. 21, 1972, 47-116207

Int. Cl.² D01F *6/00, 6/14;* C08F *29/24*

U.S. Cl. 264—184 **17 Claims**

1. A process for preparing fibers or films composed of

(a) polyvinyl alcohol having a polymerization degree of from 900 to 2500,

(b) a polyvinyl alcohol derivative having a polymerization degree from 100 to 1000 containing from 0.5 to 20% by moles of sulfonic acid or sulfate groups, said polyvinyl alcohol derivative being obtained by saponifying a copolymer produced from vinyl acetate and a sulfonic acid group bearing polymerizable monomer selected from the group consisting of vinylsulfonic acid, allylsulfonic acid, methallylsulfonic acid, and salts thereof, or is obtained by treating polyvinyl alcohol with one member selected from the group consisting of bromine and iodine and heating the thus treated polyvinyl alcohol in an aqueous solution of sodium hydrogen sulfite or is obtained by heating polyvinyl alcohol in a concentrated aqueous solution of sulfuric acid, and (c) a chloride containing a vinyl polymer formed from chloride containing monomers selected from the group consisting of vinyl chloride, vinylidene chloride, and copolymers thereof with another polymerizable vinyl monomer which does not contain chloride and

which is present in an amount not more than 15% by weight, a part of the cloride containing vinyl polymer being grafted on to the polyvinyl alcohol derivative, the content of said polyvinyl alcohol being 40 to 250% by weight based on the weight of (b) and (c), and the content of said polyvinyl alcohol derivative being 1.5 to 20% by weight of (b) and (c), the content of said chloride containing vinyl polymer being 80 to 98.5% by weight of (b) and (c) which comprises:

forming an aqueous emulsion by emulsion polymerization of said chloride-containing vinyl monomer in the presence of a polymerization catalyst and a polyvinyl alcohol derivative containing from about 0.5 to 20% by moles of sulfonic acid or sulfate groups in an amount of about 1.5 to 20% by weight of the total polymer components in the emulsion and adding said emulsion to a 14 to 20% by weight aqueous solution of said polyvinyl alcohol as a matrix that corresponds to 40 to 250% by weight of the total of said polyvinyl alcohol derivative and said chloride-containing vinyl polymer, a part of said chloride-containing vinyl polymer, a part of said chloride-containing vinyl polymer being grafted onto said polyvinyl alcohol derivative in the emulsion and then coagulating the polymers in the resulting mixture to form fiber or film.

3,962,399

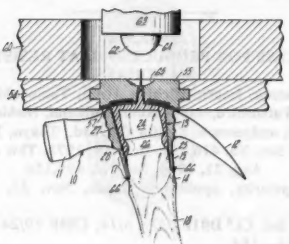
METHOD OF FORMING A HANDLE CONNECTION FOR IMPACT TOOLS

Warren Arnold Shepherd, Jr., Shelbyville, Tenn., and Joseph James Guanaccia, Wethersfield, Conn., assignors to The Stanley Works, New Britain, Conn.

Continuation-in-part of Ser. No. 340,259, March 12, 1973, Pat. No. 3,877,826. This application Jan. 30, 1975, Ser. No. 545,732

Int. Cl.² B32B *31/00*

U.S. Cl. 264—261 **10 Claims**



1. A method of forming a handle connection for impact tools comprising the steps of providing a metallic tool head with a handle receiving eye which increases in cross-section toward an exit end and a non-metallic handle having an end portion for insertion into the eye having a shoulder portion dimensioned for engagement with an entrance end of the eye while the remainder of the end portion is dimensioned to provide a clearance space between it and the eye and has a peripheral recessed portion therein adjacent the shoulder portion, inserting the end portion of the handle into the eye from the entrance end thereof and causing the shoulder to form a tight connection with the entrance end of the eye, injecting a heated thermoplastic through the exit end of the eye into the space between the end portion of the handle and the eye under a pressure in excess of the compressive strength of the material of the handle, compressing and densifying said material of the handle, and maintaining said pressure in excess of the compressive strength of the material of the handle while permitting the thermoplastic to solidify.

3,962,400

INJECTION MOLDING OF POLYAMIDES PREPARED FROM TEREPHTHALIC ACID MONO- OR DI-METHYL ESTERS AND 2,2,4-AND/OR 2,4,4-TRIMETHYLHEXAMETHYLENEDIAMINE

Johannes Schneider, and Wolfgang Pungs, both of Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Division of Ser. No. 260,942, June 8, 1972, abandoned, which is a continuation-in-part of Ser. No. 771,208, Oct. 28, 1968, abandoned. This application Sept. 10, 1973, Ser. No. 395,795

Claims priority, application Germany, Oct. 28, 1967, 1669988

Int. Cl.² B28B *1/24*

U.S. Cl. 264—328 **5 Claims**

1. In an injection molding process for the formation of a transparent, high-impact-strength object of high stability of shape wherein polymer is introduced into an injection molding apparatus maintained under conditions of temperature and pressure to form an injection molded article, the improvement which comprises utilizing as the polymer a polyamide which is the polycondensation product of a precondensate of dimethyl terephthalate and at least one diamine selected from the group consisting of 2,4,4-trimethylhexamethylenediamine and 2,2,4-trimethylhexamethylenediamine which polyamide polymer condensate has a viscosity number, according to Deutsche Industrie Norm 53,727 of 120 to 180, as measured in a 0.5% solution in m cresol of 25°C, said precondensate having a methyl ester content of 10% or less.

3,962,401

METHOD OF RECOVERING NEPTUNIUM FROM SPENT NUCLEAR FUEL

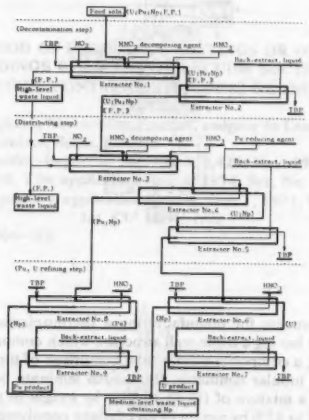
Takao Tsuboya, Tokai; Sinichi Nemoto, Naka; Tadaya Hoshino, Tokai, and Chuzaburo Tanaka, Komae, all of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Oct. 5, 1973, Ser. No. 403,976

Claims priority, application Japan, Oct. 7, 1972, 47-100829

Int. Cl.² C01G *56/00*

U.S. Cl. 423—10 **7 Claims**



1. In a method of separating and recovering neptunium contained in a spent nuclear fuel simultaneously with uranium and plutonium comprising the steps of

dissolving the spent nuclear fuel containing uranium, plutonium, neptunium and other fission products in a nitric acid solution to form a feed solution, and

counter-currently contacting said feed solution with an extracting agent of tributyl phosphate in the presence of

nitric acid and nitrous acid in a multistage extractor unit having an extracting section and a washing section to extract uranium, plutonium and neptunium into said extracting agent, the improvement wherein

the concentration of said nitrous acid in said extractor is maintained at a level suited for effecting oxidation of neptunium from Np(V) to Np(VI) by introducing nitrous acid into said extracting section, while said nitrous acid is maintained at a lower level in said washing section to suppress the reduction of neptunium from Np(VI) to Np(V) by introducing a nitrous acid decomposing agent into said washing section,

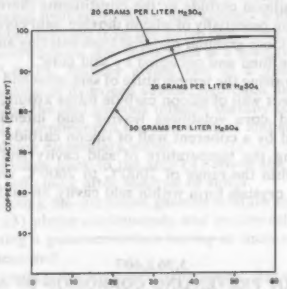
the concentration of said nitric acid in said extractor being maintained at a high level in said washing section by introducing nitric acid into said washing section.

3,962,402

OXIDATION-LEACHING OF CHALCOPYRITE

Freddie J. Touro, New Orleans, La., assignor to Freeport Minerals Company, New York, N.Y.

Filed Feb. 27, 1974, Ser. No. 446,315
Int. Cl.² C01G 3/10
U.S. Cl. 423—35 4 Claims



PERCENT COPPER EXTRACTION VERSUS OXIDATION-LEACHING RETENTION TIME FOR A COPPER SULFIDE CONCENTRATE AT 400°F., 200 PSI OXYGEN PARTIAL PRESSURE, AND VARIOUS INITIAL ACID LEVELS

1. A process for the oxidation-leaching of chalcopyrite to produce a leach liquor containing at least about 87% of the copper in the chalcopyrite but less than 1.5 grams of iron per liter, comprising:

introducing an aqueous slurry of chalcopyrite ore concentrate into an autoclave;

treating, for approximately 5 to 15 minutes, the slurry in said autoclave at a temperature of about 425° to 450°F. and at an oxygen partial pressure of about 50 to 200 pounds per square inch while increasing the acid concentration of the slurry to a value in excess of about 50 grams of H_2SO_4 per liter until at least about 87% of the copper in the concentrate is extracted as copper sulfate, the slurry having a dissolved iron concentration greater than about 1.5 grams per liter at the completion of the treatment; and

then, reducing the acid concentration of the slurry to a final acid concentration of 10 to 40 grams of H_2SO_4 per liter while it is still present in the autoclave and at a temperature of about 425° to 450°F. and an oxygen partial pressure of about 50 to 200 pounds per square inch, whereby iron is precipitated in the form of Fe_2O_3.

3,962,403

PROCESS FOR SEPARATION OF NAHCOLITE FROM OIL SHALE

Dagobert M. Wyslouzil, Peterborough, Canada, assignor to The Superior Oil Company, Houston, Tex.

Filed Jan. 14, 1974, Ser. No. 433,122
Int. Cl.² C01D 7/22; C10G 1/00
U.S. Cl. 423—206 R 11 Claims

7. A process for separation of nahcolite from nahcolite-bearing oil shale ore, comprising the steps of:

heating said nahcolite-bearing oil shale ore at a temperature of from about 100°C to about 1000°C for a time sufficient to convert at least some of the surface of said nahcolite to sodium carbonate having a distinctly lighter color than the surface of the remaining oil shale; and

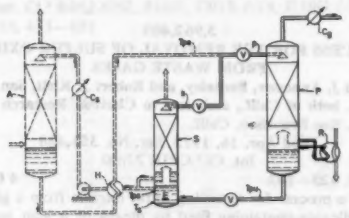
optically sorting said heated nahcolite-bearing oil shale ore to separate a lighter-colored converted nahcolite fraction from the remaining oil shale.

3,962,404

PROCESS FOR REGENERATING ABSORBENT SOLUTIONS USED FOR REMOVING GASEOUS IMPURITIES FROM GASEOUS MIXTURES BY STRIPPING WITH STEAM

Giuseppe Giammarco, and Paolo Giammarco, both of San Marco n.3242, Piazzale Morolin, Venice, Italy

Filed Feb. 19, 1974, Ser. No. 443,573
Claims priority, application Italy, May 21, 1973, 68474/73; Feb. 16, 1973, 67372/73
Int. Cl.² C01B 17/16, 31/20
U.S. Cl. 423—222 27 Claims



1. In a process for removing gaseous impurities selected from the group consisting of CO_2, H_2S, HCN and SO_2 from a mixture of gases by an absorption technique wherein an aqueous alkaline scrubbing solution selected from the group consisting of an alkali metal carbonate solution, an alkali metal carbonate solution activated by As_2O_3, an alkali metal carbonate solution activated by glycine, an alkali metal carbonate solution activated by an aminoacid, an alkali metal carbonate solution activated by ethanolamine, an alkali metal carbonate solution activated by a salt of boric acid, a solution of an alkali metal salt of an amino acid, an ethanol amine solution, an alkali phosphate solution, an alkali phenate solution, an alkali borate solution, and an alkali sulfite/alkali bisulfite solution is used to absorb said gaseous impurities from said mixture of gases in an absorption stage, and wherein said scrubbing solution is regenerated by being circulated to a regeneration stage wherein said gaseous impurities are desorbed from said scrubbing solution by contact with steam under reduced pressure, said regeneration stage actually consisting of two regeneration stages, respectively principal and secondary, the principal stage operating at a temperature and pressure higher than the secondary stage, and wherein said scrubbing solution is then recycled to said absorption stage, the improvement which comprises:

a. withdrawing said scrubbing solution containing said absorbed gaseous impurities from said absorption stage at a temperature of between about 40° and about 135°C;

b. circulating said scrubbing solution of (a) as an input to said principal regeneration stage wherein steam is contacted with said scrubbing solution to desorb said gaseous impurities;

c. regulating the amount of heat supplied to said principal regeneration stage and regulating the pressure to create a temperature difference between the temperature of said input scrubbing solution of (b) and the desorbed scrubbing solution exited from said principal regeneration stage of from 10° to 35°C and thereby obtain a temperature differential of from 5° to 10°C between the dew point of the gaseous mixture consisting of said steam and desorbed gaseous impurities removed from said principal regeneration stage and the dew point of the gaseous mixture in equilibrium with said input scrubbing solution of (b);

d. withdrawing from said principal regeneration stage the regenerated scrubbing solution, and lowering the pressure of said regenerated scrubbing solution to thereby flash off steam;

e. feeding said flashed off steam of (d) to said secondary regeneration stage as stripping steam, said secondary regeneration stage being operated at a temperature and pressure lower than that in said principal regeneration stage; and

f. recycling said regenerated scrubbing solution from the principal regeneration stage as well as regenerated scrubbing solution from the secondary regeneration stage to said absorption stage.

3,962,405

PROCESS FOR THE REMOVAL OF SULFUR OXIDES FROM WASTE GASES

Richard J. Annesser, Berkeley, and Robert J. Klett, San Francisco, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Apr. 16, 1973, Ser. No. 351,420

Int. Cl.² C01B *17/00*

U.S. Cl. 423—242 **4 Claims**

1. In a process for removing sulfur dioxide from a gaseous sulfur dioxide-containing feed by means of a lean aqueous sulfite-containing solution in a gas scrubbing zone, said lean solution comprising regenerated sulfite-containing solution and makeup solution by:

a. introducing the lean solution into the scrubbing zone;

b. introducing the feed into the scrubbing zone and into contact with the lean solution to form a fat solution and a resulting gas having a sulfur dioxide content which is less than the sulfur dioxide content of the feed gas;

c. withdrawing the resulting gas from the gas scrubbing zone;

d. withdrawing the fat solution from the gas scrubbing zone;

e. passing the withdrawn fat solution into a stripping zone and forming gaseous sulfur dioxide and said regenerated solution by stripping said fat solution;

f. withdrawing said sulfur dioxide gas from the stripping zone; and

g. withdrawing the regenerated solution from the stripping zone and forming said lean solution by adding makeup solution, said makeup solution being aqueous alkaline caustic selected from the group consisting of alkali metal hydroxide, carbonate and mixtures thereof;

the improvement which comprises scrubbing said resulting gas with at least a portion of said makeup solution prior to said addition, said scrubbing being effected by employing at least sufficient of said makeup solution to maintain the process in balance and to provide a degree of gas scrubbing corresponding to at least a single tray in a tray-type gas scrubbing tower, thereby reducing the sulfur dioxide content of the resulting effluent gas stream to a value less than about 75 ppm.

3,962,406

METHOD OF MANUFACTURING SILICON CARBIDE CRYSTALS

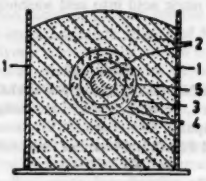
Wilhelmus Franciscus Knippenberg, and Gerrit Verspui, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 778,550, Nov. 25, 1968, abandoned. This application Aug. 15, 1972, Ser. No. 280,763

Claims priority, application Netherlands, Nov. 25, 1967, 6716070

Int. Cl.² C01B *31/36*

U.S. Cl. 423—345 **8 Claims**



1. A method of forming silicon carbide crystals on a wall of silicon carbide, comprising the steps of:

positioning within a mass of loose granular material comprising silicon carbide or the constituents thereof a core consisting essentially of silicon dioxide, said core preventing said loose granular material from entering an intended cavity defined and occupied by said core;

gradually raising the temperature of said mass and core until a coherent wall of silicon carbide forms around said core and said core volatilizes leaving said intended cavity bounded by a coherent wall of silicon carbide; and

maintaining the temperature of said cavity and coherent wall within the range of 2000°C to 2600°C until silicon carbide crystals form within said cavity on said coherent wall.

3,962,407

PROCESS OF PREVENTING CORROSION OF A METAL WALLED SYSTEM CONTAINING MOLTEN FLUORIDE

Johann Schröder, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 4, 1974, Ser. No. 529,363

Claims priority, application Germany, Dec. 6, 1973, 2360850

Int. Cl.² C01D *3/02*; C01F *11/22*

U.S. Cl. 423—464 **3 Claims**

1. A method of preventing corrosion of a metal walled system containing a melt of a fluoride selected from the group consisting of at least one alkali metal fluoride and alkaline earth fluoride and mixtures thereof in contact with at least a portion of the metal wall of said system said method comprising filling said system with a melt of a fluoride selected from the group consisting of at least one alkali metal fluoride and alkaline earth fluoride and mixtures thereof and metallic aluminum in the presence of air and then sealing said system in a gastight manner.

3,962,408

DEHYDRATION OF MAGNESIUM CHLORIDE

Henry Dolezal, Salt Lake City, Utah, assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed July 14, 1975, Ser. No. 595,902

Int. Cl.² C01F *5/34*, *5/32*, *5/30*

U.S. Cl. 423—498 **9 Claims**

1. A method for dehydrating magnesium chloride composi-

tions comprising magnesium chloride hydrates or magnesium chloride brines which comprises:

adding to said composition an amine hydrochloride of the group consisting of diethylamine, triethylamine, ethylene diamine, aniline, pyridine, toluidine or picoline, in a mole ratio of $MgCl_2$: amine hydrochloride of at least 1:1;

forming a complex of magnesium chloride hydrate and amine hydrochloride;

first heating said complex to drive off water and thereafter heating said complex at a more elevated temperature to decompose the dehydrated complex into substantially anhydrous magnesium chloride and amine hydrochloride.

3,962,409
PROCESS FOR PRODUCTION OF HYDROGEN AND SULFUR FROM HYDROGEN SULFIDE AS RAW MATERIAL

Yoshihide Kotera, Kawasaki; Naoyuki Todo, Tachikawa, and Kenzo Fukuda, Niiza, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Oct. 24, 1974, Ser. No. 517,656

Claims priority, application Japan, Oct. 29, 1973, 48-120727

The portion of the term of this patent subsequent to Dec. 24, 1991, has been disclaimed.

Int. Cl.² C01B *17/04*

U.S. Cl. 423—571 **6 Claims**

1. In a process for the production of hydrogen and sulfur from hydrogen sulfide, the improvement which comprises:

1. bringing hydrogen sulfide into contact with at least one member selected from the group consisting of the sulfides of molybdenum, and ruthenium at a temperature of from 450°–800°C thereby giving rise to a gaseous mixture consisting of hydrogen sulfide, hydrogen and sulfur,
2. cooling the said gaseous mixture thereby condensing the sulfur component of the said mixture and separating and obtaining elementary sulfur,
3. circulating back to the step (1) above the gaseous mixture remaining after removal of sulfur,
4. subjecting the circulated gaseous mixture to the steps (2) and (3) above continuously and recurrently for thereby forming a gaseous mixture having an increased hydrogen content and
5. separating the hydrogen component from the gaseous mixture having an increased hydrogen content.

3,962,410
PROCESS FOR PURIFYING INDUSTRIAL GASES CONTAINING HYDROGEN SULFIDE WITH SULFUR PRODUCTION

Philippe Renault, Noisy-Le-Roi; André Deschamps, Chatou, and Claude Dezael, Maisons-Laffitte, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Nov. 19, 1973, Ser. No. 416,868

Claims priority, application France, Nov. 20, 1972, 72.41219

The portion of the term of this patent subsequent to Nov. 5, 1991, has been disclaimed.

Int. Cl.² C01B *17/04*; C01D *7/02*

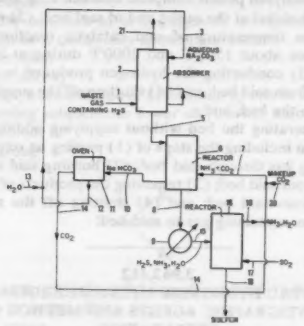
U.S. Cl. 423—574 R **6 Claims**

1. A process for purifying a hydrogen sulfide containing gas by means of an aqueous solution of sodium hydroxide or sodium carbonate, comprising the steps of:

a. contacting said gas with an aqueous solution of sodium hydroxide or sodium carbonate, so as to obtain a sodium sulfide solution,

b. contacting the sodium sulfide solution with an aqueous solution of ammonium hydrogen carbonate or with an equivalent gaseous mixture of carbon dioxide and ammonia, to precipitate sodium hydrogen carbonate and form a remaining liquid phase.

c. separating resultant precipitated sodium hydrogen carbonate from the remaining liquid phase, and



d. heating the remaining liquid phase from step c), to produce a gas containing ammonia, hydrogen sulfide and carbon dioxide.

3,962,411
METHOD FOR CATALYTICALLY CRACKING A HYDROCARBON FUEL

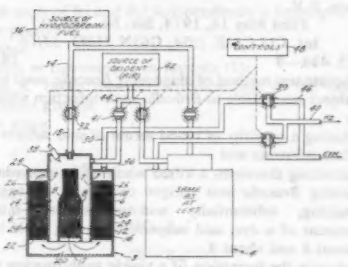
Herbert J. Setzer, Ellington, and Warren R. Standley, Tolland, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 424,486, Dec. 13, 1973, abandoned.

This application May 2, 1975, Ser. No. 574,187

Int. Cl.² B01J *8/02*, *35/08*; C01B *1/16*; C10G *11/04*

U.S. Cl. 423—651 **1 Claim**



1. An improved blow and run catalytic cracking process for the production, from gaseous and distillate hydrocarbon fuels, of a gaseous product which comprises mainly hydrogen, together with small amounts of carbon monoxide and water and traces of other byproducts, involving alternately making hydrogen and regenerating the catalyst bed which comprises the steps of:

A. making hydrogen by catalytically cracking without the use of steam a gaseous or distillate hydrocarbon fuel to form gaseous hydrogen and solid carbon including the steps of (1) passing said hydrocarbon fuel through a catalytic reaction bed consisting of supported metal, ring catalyzed pellets consisting of substrates of ceramics which are essentially spherical and selected from the group consisting of zirconia, alumina and mixtures of zirconia and alumina, having diameters of between one-quarter of an inch and five-eighths of an inch with nickel deposited to a depth of between one mil and one-hundred mils from the surface thereof so as to provide catalyzed substrates having substantial uncatalyzed cores, wherein

said catalyzed pellets comprise between ½% and 5% nickel by weight at the inlet end of said catalyst bed and said catalyzed pellets comprise between 15% and 50% by weight nickel at the outlet end of said bed; (2) maintaining the temperature of said catalytic reaction bed at between about 1500°F and 2000°F during at least step (1); (3) conducting the hydrogen produced in said bed away from said bed; and (4) shutting off the supply of said fuel to the bed; and

B. regenerating the bed without supplying additional fuel thereto including the steps of (1) passing an oxygen containing gas through said bed; (2) burning said solid carbon from said bed; (3) removing the products of combustion from said bed; and (4) shutting off the supply of oxygen containing gas to said bed.

3,962,412

METAL HYDROXIDE MICROSPHEROIDAL SCINTIGRAPHIC AGENTS AND METHOD OF PREPARATION

Robert G. Wolfangel, St. Louis, Mo., assignor to Mallinckrodt Chemical Works, St. Louis, Mo.

Filed June 11, 1973, Ser. No. 368,864
Int. Cl.² A61K *43/00*
U.S. Cl. 424—1 3 Claims

1. A composition for use as a scintigraphic agent comprising an aqueous suspension of substantially spherical particles of an insoluble metal hydroxide tagged with a radionuclide, said particles having diameters between approximately 10μ and 100μ.

3,962,413

PLATE METHODS FOR DIAGNOSING *BRUCELLA CANIS* INFECTION

Lisle W. George, Cortland, and Leland E. Carmichael, Ithaca, both of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed May 14, 1974, Ser. No. 469,917
Int. Cl.² C12K *1/04*; G01N *31/02*, *33/16*
U.S. Cl. 424—8 18 Claims

1. A plate test method of diagnosing *Brucella canis* infection in a subject susceptible to *Brucella canis* infection which comprises:

a. placing a quantity of blood serum of said subject upon a plate substrate and

b. admixing therewith a killed whole cell suspension comprising *Brucella ovis* antigen containing an agglutinate staining, substantially non-agglutination interfering amount of a dye, said suspension having a pH between about 6 and about 8,

c. wherein the formation of a visible agglutination product in the resulting mixture is indicative of *Brucella canis* infection.

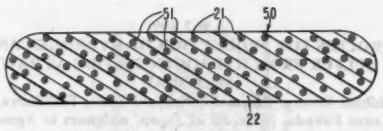
3,962,414

STRUCTURED BIOERODIBLE DRUG DELIVERY DEVICE

Alan S. Michaels, Atherton, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 248,168, April 27, 1972, Pat. No. 3,867,519. This application Oct. 25, 1974, Ser. No. 517,982
Int. Cl.² A61K *9/22*, *9/50*, *9/52*, *9/54*
U.S. Cl. 424—19 9 Claims

1. A delivery device for the sustained administration of a predetermined dosage of an ophthalmic drug to the eye of a mammalian patient comprising (1) an inner reservoir comprised of a biodegradable material that degrades to innocuous products in response to the biological ocular environment of the patient, said reservoir containing an ophthalmic drug formulation confined therein, and (2) an outer membrane surrounding the inner reservoir, the membrane permeable to the passage of ophthalmic drug, but at a lower rate than through the inner reservoir, the membrane formed from drug release rate controlling bioerodible material consisting of a polyvalent metal ion cross-linked anionic polyelectrolyte, said ion a member selected from the group consisting of aluminum, barium, cadmium, calcium, copper, iron, zinc and mixtures thereof, said polyelectrolyte a member selected from the group consisting of cellulose, hemicellulose, starch, polystyrene sulfonic acid, polyvinyl sulfonic acid, polyvinyl methylol sulfonic acid, polyacrylic acid, polymethacrylic acid, acrylic copolymers, methacrylic copolymers, polyvinyl alcohol, polyvinyl chloride, glycans and polysaccharides, which outer membrane bioerodes in the eye of the patient in response to the biological environment therein by a process of polyvalent metal ion displacement by noncross-linking ions present in the eye, and wherein when in the ocular environment the membrane continuously meters the flow of a therapeutically effective amount of ophthalmic drug from the reservoir to the eye of the patient at a controlled and continuous rate over a prolonged period of time.



3,962,415

INSECTICIDE EVAPORATOR COMPRISING DDVP WITH SYNERGIZED BENZODIOXOLE COMPOUND AS STABILIZER

Claude Hennart, Aubervilliers, and Marcel Louis Dulat, Poitiers, both of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.

Continuation-in-part of Ser. No. 180,507, Sept. 14, 1971, Pat. No. 3,852,439. This application July 17, 1973, Ser. No. 380,129
Int. Cl.² A01N *17/00*, *9/36*
U.S. Cl. 424—19 9 Claims

1. An insecticide evaporator comprising:

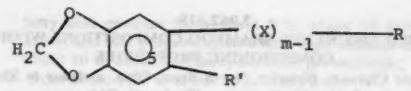
I. a solid or liquid insecticidal composition containing

A. an insecticidally effective amount of an insecticidal phosphate selected from the group consisting of

2,2-dichloro vinyl dimethyl phosphate
2,2-dichloro vinyl diethyl phosphate
2,2-dichloro vinyl dipropyl phosphate
2,2-dibromo vinyl dimethyl phosphate
2,2-dibromo vinyl diethyl phosphate
2,2-dibromo vinyl dipropyl phosphate
2-bromo-2-chloro vinyl dimethyl phosphate
2-bromo-2-chloro vinyl diethyl phosphate
2,2-dichloro vinyl, ethyl methyl phosphate
2,2-dichloro 1-methyl vinyl dimethyl phosphate and
2,2-dichloro 1-methyl vinyl diethyl phosphate,

wherein on contact with molecules of water at least partial decomposition of the ester takes place by protonization, said vinyl phosphate optionally being admixed with a solid or liquid solvent,

B. about 0.1 to 10%, based on the weight of said volatile phosphate, of a 1,3-benzodioxole capable of stabilizing said phosphate against decomposition by protonization, said benzodioxole having no action as a toxicity synergist for the insecticidal phosphate in said proportions, and selected from the group consisting of at least one compound of the formula



(I)

wherein *m* is 1 or 2, and X is an alkylene bridge of 1 or 2 or an alkenylene bridge of 2 carbon atoms, and R′ is

a. hydrogen or

b. lower alkyl and

A. When *m* represents 1 in formula (I) R represents

a. hydrogen

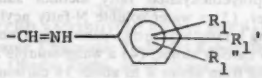
b. lower alkyl

c. lower alkenyl

d. halogen of atomic number not exceeding 17

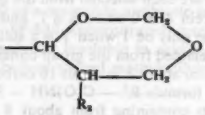
e. nitro

f. the group



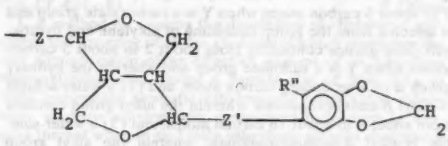
in which each of R_1, R_1' and R_1'', independently of the others, is the same or a different group selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, chloro and bromo;

g. the group



in which R_2 is hydrogen or lower alkyl, or

h. the group



in which Z and Z′ are each independently a C—C bond or an oxygen atom (—O—) and R″ is hydrogen, lower alkyl or lower alkoxy, and

B. when *m* represents 1 or 2 in formula (I)

R represents

i. cyano

ii. the group

wherein R_4 is hydrogen, or lower alkyl and R_5 is hydrogen or lower alkyl,

iii. the group —CO—R_6 in which R_6 is

a. hydrogen

b. —OM in which M is hydrogen or an equivalent metal cation or a quaternary ammonium cation

c. lower alkyl

d. lower alkoxy

e. phenyl, unsubstituted or substituted by one or more of the following substituents: lower alkyl, lower alkoxy, chloro, or bromo; or

f. the group

wherein each of R_7 and R_7' is independently selected from hydrogen or lower alkoxy

iv. the group

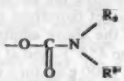
alkyl

in which the alkyl group has 1 to 8 carbon atoms

v. the group —O—R_8

in which R_8 is lower alkyl or oxa alkyl of at most 15 carbon atoms and 3 oxygen atoms in the chain,

vi. the group



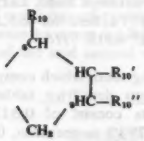
in which each of R_9 and R_9' independently is hydrogen, lower alkyl or phenyl or

vii. nitro

C. when *m* represents 1 in formula (I):

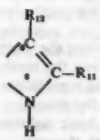
R and R′ taken together represent one of the following divalent groups:

a. the group



in which each of R_{10}, R_{10}' and R_{10}'' independently is hydrogen, lower alkyl, alkoxycarbonyl of 2 to 5 carbon atoms, or the group —COOM, M having the meaning given above, or

b. the group



in which R_{11} is

hydrogen, lower alkyl, lower alkoxy or pyrrolidino,

and R_{12} represents

hydrogen or lower alkyl,

c. at least one secondary agent for stabilizing said phosphate against decomposition by protonization selected from:

C_1 about 0.05 to 6%, based on the weight of said vinyl phosphate, of elemental suplhur or

C_2 about 0.05 to 10% by weight based on the weight of said vinyl phosphate of a divalent sulfur compound,

II. a solid fibrous support absorbent for the composition (I) formed of a felt of wool, a cellulosic fiber material or a cardboard of glass fibers.

3,962,416
PRESERVED NUTRIENTS AND PRODUCTS

Sol Katzen, Hanassi St., No. 62, Herzliya Fituach, Israel

Division of Ser. No. 109,566, Jan. 25, 1971. This application July 2, 1973, Ser. No. 375,435
Int. Cl.² A23L 1/30
U.S. Cl. 424—19 **7 Claims**

1. An encapsulated product which comprises (a) at least one nutrient, which is in particulate form, and (b) a gelatinized carbohydrate or polymerized vegetable high protein encapsulating agent which encapsulates the nutrient particles, said product prepared by: (a) admixing at least one high-protein vegetable encapsulating agent or carbohydrate vegetable encapsulating agent and at least one nutrient, said high protein vegetable encapsulating agent containing only up to 40 percent by weight of starch and non-protein nitrogenous material, from about 1 to about 40 parts by weight of said nutrient being present per 100 parts by weight of said encapsulating agent, said high protein or carbohydrate vegetable encapsulating agent being selected from the group consisting of corn flour, cottonseed flour, soybean flour, wheat flour, and wheat gluten flour and said encapsulating agent being in a viscid state before admixture step (a) because of added water; (b) gelatinizing or polymerizing the encapsulating agent and forming an expanded product therefrom which encompasses the nutrient by extruding the above admixture at a temperature between about 250° to 450° F. and at a pressure between about 200 p.s.i. and about 2500 p.s.i. for a time between about 3 seconds and about 3 minutes, whereby the extrudate expands due to flash evaporation of the water upon exiting from the extruder; and (c) cooling the resultant expanded extrudate to form and encapsulated nutrient product containing air spaces.

3,962,417
DENTIFRICE

Charles J. Howell, 8436 Brentwood Road, Largo, Fla. 33540

Filed Mar. 27, 1974, Ser. No. 455,266
Int. Cl.² A61K 7/18
U.S. Cl. 424—52 **1 Claim**

1. A method for cleansing teeth which comprises:

a. placing an effervescent dentifrice tablet wherein the constituent ingredients consist of 0.317% saccharin, 0.931% floral mint, 2.793% peppermint, 0.279% sodium copper chlorophyllin, 1.453% sodium lauryl sulfate, 11.173% magnesium carbonate, 21.229% calcium carbonate, 40.223% sodium bicarbonate, 18.622% citric acid, 1.117% stannous flouride, 0.913% magnesium sterate and 0.931% acacia powder, all percents by weight, directly into the mouth containing or having present a principal bacterium causing tooth decay acids, *Bacillus Acidophilios;*

b. orienting said tablet between the teeth;

c. crushing said tablet between the teeth;

d. completely dissolving said ingredients into a basic solution utilizing moisture in the mouth;

e. circulating the formed basic solution throughout the mouth and about the teeth therein;

f. brushing the teeth with said formed solution utilizing a brushing instrument, thereby neutralizing the acidic *Bacillus Acidophilios;*

g. expectorating said formed solution subsequent to said brushing; and

h. rinsing the mouth so as to remove remnants of said formed solution.

3,962,418
MILD THICKENED SHAMPOO COMPOSITIONS WITH CONDITIONING PROPERTIES

Roger Clarence Birkofer, North Bend, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 313,907, Dec. 11, 1972, abandoned. This application Apr. 8, 1975, Ser. No. 566,154
Int. Cl.² A61K 7/06
U.S. Cl. 424—70 **18 Claims**

1. A thickened mild liquid shampoo composition having conditioning properties comprising:

A. from about 4% to about 8% of an anionic surfactant selected from the group consisting of (1) a surfactant of the formula $R(OC_2H_4)_nOSO_3M$, wherein R is a hydrophobic group selected from the group consisting of alkyl groups containing from about 8 to about 16 carbon atoms, alkylphenyl groups wherein the alkyl group contains from about 6 to about 15 carbon atoms, and fatty acid amido groups wherein the fatty acid contains from about 8 to about 16 carbon atoms, wherein n is a number from about 1 to about 10, and M is a non-toxic cation which makes the surfactant water-soluble, (2) a water-soluble polyethoxylated fatty alcohol sulfosuccinate monoester, (3) a water-soluble N-fatty acyl sarcosinate containing a fatty acyl group containing from about 8 to about 16 carbon atoms, (4) a water-soluble alkyl sulfate containing from about 8 to about 16 carbon atoms, and (5) a water-soluble N-fatty acyl-N-methyl taurine containing a fatty acyl group containing from about 8 to about 16 carbon atoms;

B. a surfactant selected from the group consisting of (1) a quaternary ammonium zwitterionic surfactant having the formula $(R^2)_A N^{(+)}(R^3)_{3-A}CH_{2-B}(R^2)_B(R^4)_C Y^{(-)}$

wherein A, B, and C are each selected from the group consisting of 0 and 1, wherein A is 0 when B is 1 and A is 1 when B is 0, wherein C can only be 1 when Y is a sulfonate group, wherein each R^2 is selected from the group consisting of alkyl groups containing from about 8 to about 16 carbon atoms and a moiety having the formula $R^5 — C(O)NH — R^6—$ wherein R^5 is an alkyl group containing from about 8 to about 16 carbon atoms and R^6 is an alkylene group containing from 1 to about 5 carbon atoms, wherein each R^3 is selected from the group consisting of alkyl, hydroxyalkyl and alkoxyalkyl groups which can be connected to form a ring and each of which contains from 1 to about 3 carbon atoms, wherein Y is selected from the group consisting of sulfonate and carboxylate groups, and wherein R^4 is an alkylene group containing from 1 to about 5 carbon atoms when Y is a carboxylate group and is selected from the group consisting of alkylene and hydroxyalkylene groups containing from about 2 to about 5 carbon atoms when Y is a sulfonate group and wherein the hydroxy group is on a secondary carbon atom, and (2) a water-soluble N-alkyl β-aminopropionate wherein the alkyl group contains from about 8 to about 16 carbon atoms, and (3) a water-soluble N-alkyl β-iminodipropionate wherein the alkyl group contains from about 8 to about 16 carbon atoms;

C. a polyethoxylated nonionic surfactant selected from the group consisting of: (1) polyethoxylated alkyl alcohols, said alcohols containing an alkyl group containing from about 8 to about 16 carbon atoms and said polyethoxylated alcohols containing from about 10 to about 45 ethoxy moieties per molecule, (2) polyethoxylated alkylphenols wherein the alkyl group contains from about 6 to about 15 carbon atoms and wherein the polyethoxylated alkylphenol contains from about 10 to about 45 ethoxy moieties per molecule, (3) polyethoxylated mono fatty acid esters of sorbitol wherein said fatty acids contain from about 8 to about 18 carbon atoms and said polyethoxylated mono fatty acid ester of sorbitol contains from about 10 to about 45 ethoxy moieties per molecule, (4) polyethoxylated polypropylene glycol having a molecular weight of from about 2,000 to about 6,000 and containing from about 40% to about 60% by weight of polyethoxy groups, and (5) polyethoxylated fatty acids wherein said

fatty acid contains from about 8 to about 16 carbon atoms and said polyethoxylated fatty acid contains from about 10 to about 45 ethoxy moieties per molecule;

D. from about 50% to about 85% water; and

E. as a thickener and hair conditioning agent, from about 0.2% to about 4% of a quaternary nitrogen-containing cellulose ether having substituent groups of the formula

$$(C_2H_4O-)_n[-CH_2CHO(CH_2N^{(+)}(R^7)_2Cl^{(-)}-)]_n(C_2H_4O-)_nH$$

wherein each R^7 is selected from the group consisting of methyl and ethyl groups, $m + p$ ranges from about 1 to about 10, n is from about 0.1 to about 0.5, the degree of substitution of the cationic group on the cellulose is from about 0.1 to about 0.5, and the viscosity of a 1% solution of the cellulose ether at 25°C. ranges from about 100 to about 2,000 centipoises, the molecular ratio of (A) to (B) being from about 1:1 to about 4:1; the weight ratio of (A) + (B) to (C) being from about 2:1 to about 1:2; and the pH of the composition being from about 6.0 to about 8.0.

3,962,419
STABILIZED ANTIBIOTIC SF-837 PREPARATION

Takeshi Mayama, Chigasaki; Toshiyuki Kobayashi, Kawasaki, and Akira Okada, Zushi, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Japan

Continuation of Ser. No. 241,418, April 5, 1972, abandoned. This application Aug. 9, 1974, Ser. No. 496,299
Claims priority, application Japan, Apr. 15, 1971, 46-23452
Int. Cl.² A61K *9/36, 31/765, 35/00*
U.S. Cl. 424—78 **4 Claims**

1. A stabilized antibiotic preparation containing (1) at least 50% by weight of a macrolide antibiotic consisting essentially of antibiotic SF-837 incorporated into (2) a stabilizing amount of a polymer insoluble in acidic solutions consisting essentially of hydroxypropyl methylcellulose phthalate.

3,962,420
DISSOLUTION OF GALLSTONES

Michael C. Seidel, Chalfont, Pa., and Evan H. Crook, Cherry Hill, N.J., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed July 3, 1974, Ser. No. 485,476
Int. Cl.² A61K *31/78*
U.S. Cl. 424—81 **9 Claims**

1. A method for causing the dissolution of cholesterol gallstones and lowering of serum cholesterol which comprises the oral administration of an effective amount of an adsorbent macroreticular resin having a particle size of from 0.1μ to 300μ comprising aromatic ethylenically unsaturated monomers, aliphatic ethylenically unsaturated monomers or mixtures thereof wherein said resin selectively adsorbs cholesterol from the GI tract without affecting bile acid readsorption resulting in a disturbance of the bile acid to cholesterol ratio causing reduced lithogenicity.

3,962,421
METHOD FOR THE DISRUPTION OF LIPID-CONTAINING VIRUSES

Alexander R. Neurath, Philadelphia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 370,906, June 18, 1973, abandoned, which is a continuation of Ser. No. 201,937, Nov. 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 134,935, April 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 826,783, May 16, 1969, abandoned. This application Sept. 19, 1974, Ser. No. 507,306
Int. Cl.² A61K *39/18, 39/29*
U.S. Cl. 424—89 **16 Claims**

1. In a method for the disruption of infectious lipid-containing viruses for preparing sub-unit vaccines, the step of bringing the intact infectious lipid-containing virus in an aqueous medium into contact with effective amounts of a wetting agent and a trialkylphosphate wherein said alkyl groups contain from 4 to 10 carbon atoms.

3,962,422
METHOD FOR IMMUNIZING NURSING PIGLETS AGAINST TRANSMISSIBLE GASTROENTERITIS(TGE) VIRUS

John B. Parks, Mountain View, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Feb. 18, 1975, Ser. No. 550,319
Int. Cl.² A61K *39/12, 39/42*
U.S. Cl. 424—89 **6 Claims**

1. Method of immunizing nursing piglets against transmissible gastroenteritis (TGE) virus by administering to a pregnant sow an effective amount of a vaccine containing attenuated tissue cultured propagated TGE virus, said vaccine being administered twice, (a) intramuscularly at from about 63 days to about 21 days pre-farrowing and (b) intranasally at from about 21 days to about 7 days prefarrowing, with the proviso that at least 14 days and not more than 42 days elapse between the intranasal and intramuscular inoculations, and permitting said nursing piglets to suckle said sow.

3,962,423
LIVE INFLUENZA TYPE B VIRUS VACCINES AND PREPARATION THEREOF

Julien Peetermans, Rixensart; Michèle Lobmann, Ceroux-Mousty; Jean-Marie Prevost, and Emil Vascoboinic, both of Brussels, all of Belgium, assignors to Recherche et Industrie Therapeutiques (R.I.T.), Belgium

Continuation-in-part of Ser. No. 439,176, Feb. 4, 1974, abandoned. This application Apr. 18, 1975, Ser. No. 569,258
Int. Cl.² A61K *39/18*
U.S. Cl. 424—89 **12 Claims**

1. A live influenza virus vaccine effective on intranasal administration comprising an effective amount of an attenuated influenza type B virus recombinant strain obtained by recombining a first vaccinal attenuated influenza type B virus strain resistant to serum inhibitors with a second influenza type B virus strain, and isolating a recombinant having (1) at least one marker property of the said first virus strain selected from the group consisting of positive allantoic membrane on shell and resistance to serum inhibitors and (2) the antigenic characteristics of the said second virus strain, and a carrier therefor.

3,962,424
LIVE BROVINE ADENOVIRUS VACCINES, PREPARATION THEREOF AND METHOD OF VACCINATION USING THEM

Nathan Zygraich, Brussels, and Constant Huygelen, Huldenberg, both of Belgium, assignors to Recherche et Industrie Therapeutiques (R.I.T.), Belgium

Division of Ser. No. 438,503, Jan. 31, 1974, Pat. No. 3,927,208. This application Aug. 13, 1975, Ser. No. 604,377
Int. Cl.² A61K *39/12, 39/34*
U.S. Cl. 424—89 **8 Claims**

1. A polyvalent live intranasal bovine respiratory vaccine comprising (1) an intranasally effective dose of a temperature-sensitive nitrous acid mutant of a pathogenic bovine adenovirus, said mutant being protective against bovine adenovirus type 3 infection, having a cut-off temperature of from about 39° to 40°C, and being able to multiply in the upper respiratory tract of a bovine animal while having inhibited replication in the lower respiratory tract and internal organs of the body; (2) an intranasally effective dose of a vaccinal live temperature-sensitive mutant of a pathogenic infectious bovine rhinotracheitis virus; and (3) a pharmaceutical diluent.

3,962,425

RUMINANT REPELLENT FROM ENZYMATICALLY PUTREFIED LIPOIDAL MATERIAL

Katashi Oita, and James C. Lowe, both of Seattle, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Continuation-in-part of Ser. No. 291,058, Sept. 21, 1972, abandoned. This application July 17, 1974, Ser. No. 489,458
Int. Cl.[2] A61K *37/48*
U.S. Cl. 424—94 19 Claims

1. A method for repelling ruminants from material normally eaten by said ruminants comprising:

contacting said edible material with a ruminant repelling non-phytotoxic amount of a ruminant repellent composition, an active ingredient of said repellent composition comprising a putrescent product of a mixture of an animal lipoidal material and an amount of a lipolytic enzyme in excess of the lipolytic enzyme occurring naturally in said lipoidal material.

3,962,426

ANTIBIOTICS LL-AC541 AND RACEMOMYCIN A AS TAENIACIDAL AGENTS

Joseph Szanto, Flemington; William E. Brown, Princeton, and Edward Meyers, East Brunswick, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 27, 1975, Ser. No. 562,711
Int. Cl.[2] A61K *35/74*
U.S. Cl. 424—116 9 Claims

1. A method of treating a mammalian or poultry host infected with tapeworms which comprises orally administering to the host an effective taenicidal dose an antibiotic selected from the group consisting of LL-AC541, racemomycin A, and mixtures thereof.

3,962,427

ANTIBIOTIC NEBRAMYCIN FACTOR VII

William Max Stark, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 313,222, Dec. 8, 1972, Pat. No. 3,853,709, which is a continuation-in-part of Ser. No. 83,834, Oct. 26, 1970, abandoned. This application July 31, 1974, Ser. No. 493,426
Int. Cl.[2] A61K *35/00*
U.S. Cl. 424—118 1 Claim

1. The antibiotic nebramycin VII, said antibiotic being a basic, water soluble colorless crystalline compound having an empirical formula of $C_{21}H_{41}N_5O_{13}$; which is slightly soluble in methanol; which has the following percent elemental composition:

45.10 percent carbon
7.53 percent hydrogen
12.37 percent nitrogen
34.82 percent oxygen;

which has the following distinguishable absorption maxima in its infrared spectrum: 3.01, 3.47, 6.27, 6.91, 7.38, 7.50, 7.73, 7.98, 8.08, 8.51, 8.75, 8.97, 9.75, 10.01, 10.35, 10.65, 10.91, 11.98, 12.55 and 12.81 microns; which is transparent in the ultraviolet region of the spectrum; and which has a specific rotation of $[\alpha]_D^{27} = +170.4°$ (c = .154% in water).

3,962,428

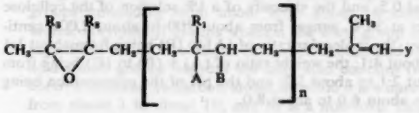
STABILIZED INSECTICIDE COMPOSITIONS

Alexander Emodi, West Orange, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

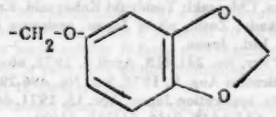
Division of Ser. No. 508,015, Sept. 20, 1974, which is a continuation-in-part of Ser. No. 323,494, Jan. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 180,100, Sept. 13, 1971, abandoned. This application Dec. 13, 1974, Ser. No. 532,656
Int. Cl.[2] A01N *9/28*
U.S. Cl. 424—174 5 Claims

1. A stabilized insecticide composition comprising;

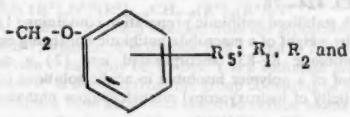
a. from about 10 to 75 weight percent of a juvenile hormone of the formula:



wherein Y is $-COOR_4$, $-CH_2-O-C \equiv CH$,



or



R_3 are hydrogen, methyl or ethyl; R_4 and R_5 are hydrogen or lower alkyl; n is an integer of from 0 to 1; and A and B are hydrogen or taken together to form a carbon to carbon bond;

b. from about 1% to 25% by weight of a phenolic anti-oxidant; and

c. from about 1 to 20% by weight of a benzotriazole U.V. absorber selected from the group consisting of 2-(3′,5′-ditert butyl-2′-hydroxy-5′-methylphenyl)-5-chlorobenzotriazole, 2(3,5′-ditert. butyl-2′-hydroxyphenyl)-5-chlorobenzotriazole, and 2(2′-hydroxy-5′-methylphenyl)-benzotriazole.

3,962,429

METHOD FOR REDUCING SIDE EFFECTS OF AMINOGLYCOSIDE ANTIBIOTICS AND COMPOSITION THEREFOR

Kouji Furuno, Kokubunji; Akira Okazaki, Oyama; Syuzo Matsubara, Fuchu; Motoharu Shiba, Omiya, and Akitoshi Shioya, Kawagoe, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed July 23, 1974, Ser. No. 491,171
Claims priority, application Japan, Aug. 1, 1973, 48-85846
Int. Cl.[2] A01N *9/00, 9/28*
U.S. Cl. 424—181 25 Claims

1. A method for treating bacterial infection and reducing the side effects of such treatment, comprising administering to mammals, in an amount sufficient to treat bacterial infection, both glucosaccharo-1,4-lactone, glucosaccharo-6,3-lactone, or the sodium, potassium or calcium salt of one of said lactones, and an aminoglycoside antibiotic selected from the group consisting of streptomycin, neomycin B and C, kanamycin A, B and C, ribostamycin, paromomycin I and II, a gentamicin complex, tobramycin, butirosin A and B, lividomycin A

and B, 3′, 4′-dideoxy-kanamycin B, sismomicin, 1-N-{(S)-4-amino-2-hydroxybutylyl}-3′,4′-dideoxy-kanamycin B, 1-N-{(S)-4-amino-2-hydroxybutylyl}-3′,4′-dideoxyneamine, 1-N-{(S)-4-amino-2-hydroxybutylyl} kanamycin A and mineral acid addition salts thereof, wherein said lactone or salt is used in an amount of from 50–1000% by weight of the antibiotic used based on the free form of the amino-glycoside antibiotic.

3,962,430

STERILIZATION OF SOLID NON-ELECTROLYTE MEDICINAL AGENTS EMPLOYING SODIUM CHLORIDE

Joseph L. O'Neill, Lafayette Hill, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 495,453, Aug. 7, 1974, abandoned, which is a continuation-in-part of Ser. No. 381,845, July 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 160,570, July 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 826,719, May 21, 1969, abandoned, which is a continuation-in-part of Ser. No. 485,592, Sept. 17, 1965, abandoned. This application July 14, 1975, Ser. No. 596,398

Int. Cl.² A61K *31/69*

U.S. Cl. 424—185 **6 Claims**

1. A process for preparing a sterile isotonic aqueous pharmaceutical suspension of a solid non-electrolyte medicinal agent selected from the group consisting of a corticosteroid, a steroid and a non-steroid wherein the corticosteroid is selected from the group consisting of cortisone, cortisone acetate, dexamethasone, dexamethasone acetate, dexamethasone tertiary butyl acetate, hydrocortisone acetate, predisolone, prednisolone acetate, betamethasone acetate, triamcinolone acetonide and methyl prednisolone; the steroid is selected from the group consisting of androsterone, 17-methyltestosterone, testosterone, testosterone borate, dienstrol, diethylstilbesterol, estradiol, estradiol-17-acetate, estradiol benzoate and ethinyl estradiol-3-methyl ether; and the non-steroid is selected from the group consisting of propylidone, primidone, diphenylhydantoin, indomethacin and thiabendazole, which comprises adding the medicinal agent to a mixture of sodium chloride and water, the concentration of sodium chloride being sufficient for a saturated solution at 100°C, heating at a temperature of from about 100°–130°C for a time sufficient to sterilize the medicinal agent and the aqueous system and after cooling to room temperature, adding sterile water for dilution to obtain the desired concentration of said medicinal agent in an effective amount in suspension.

3,962,431

INSECTICIDAL USE OF O,O-DIALKYL PHOSPHORODITHIOATE AND PHOSPHOROTHIOATE ESTERS OF OXAZOLIDINE-2,4-DIONE DERIVATIVES

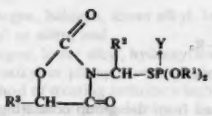
Joel Dexter Jamison, Mountainside, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 115,735, Feb. 16, 1971, abandoned, which is a division of Ser. No. 694,813, Jan. 2, 1968, Pat. No. 3,632,598. This application Apr. 26, 1972, Ser. No. 247,750

Int. Cl.² A01N *9/36*

U.S. Cl. 424—200 **7 Claims**

1. An insecticidal composition comprising an insecticidally effective quantity of a compound of the formula:



in which Y is O or S; R^1 is CH_3 or C_2H_5; and R^2 and R^3 are CH_3 or H, and a dispersing agent therefor.

3,962,432

METHOD OF TREATMENT OF CALCIUM DISORDERS USING AMINOALKANE-DIOPHOSPHONIC ACIDS

Manfred Schmidt-Dünker, Dusseldorf, Germany, assignor to Henkel & Cie G.m.b.H., Dusseldorf, Germany

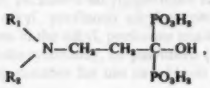
Filed Dec. 3, 1974, Ser. No. 529,039

Claims priority, application Germany, Feb. 4, 1974, 2405254

Int. Cl.² A61K *31/66*

U.S. Cl. 424—204 **8 Claims**

1. A method for alleviating conditions caused by the abnormal deposition or dissolution of difficulty soluble calcium salts in the body of warm-blooded animals having said conditions which consists in administering orally or parenterally to said warm-blooded animals, from 0.05 to 500 mg.kg. of the animal body weight of a pharmacologically acceptable aminoalkane-diphosphonic acid derivative selected from the group consisting of (A) at least one aminoalkane-diphosphonic acid of the formula:



wherein R_1 and R_2 are each selected from the group consisting of hydrogen and alkyl having 1 to 3 carbon atoms, and (B) a pharmacologically acceptable water-soluble salt of (A), said derivative being administered in the form of tablets, pills or capsules, or as injectable solutions.

3,962,433

METHOD OF TREATMENT OF CALCIUM DISORDERS USING PHOSPHONOALKANE-POLYCARBOXYLIC ACIDS

Karl-Heinz Worms, Dusseldorf-Holthausen; Christian Glaxhuber, Haan; Manfred Schmidt-Dunker, Dusseldorf, and Helmut Blum, Dusseldorf-Holthausen, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

Filed Dec. 3, 1974, Ser. No. 529,040

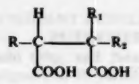
Claims priority, application Germany, Dec. 6, 1973, 2360797

Int. Cl.² A61K *31/66*

U.S. Cl. 424—212 **10 Claims**

1. A method for the treatment of diseases relating to the abnormal deposition or dissolution of difficultly soluble calcium salts in the body of warm-blooded animals which consists of administering orally or parenterally to said warm-blooded animals, a safe but effective amount for said treatment of at least one pharmacologically acceptable phosphonoalkane-polycarboxylic acid selected from the group consisting of

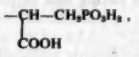
A. at least one phosphonoalkane-polycarboxylic acid of the formula



wherein R is selected from the group consisting of hydrogen and alkyl having 1 to 3 carbon atoms,
wherein R_1 is selected from the group consisting of

and

and
wherein R_2 is selected from the group consisting of hydrogen, alkyl having 1 to 3 carbon atoms, $-CH_2-CHRCOOH$, $-CH_2-CHRPO_3H_2$ and



and
B. a non-toxic pharmacologically acceptable water-soluble salt of (A).

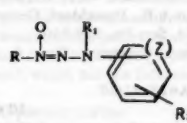
3,962,434

3-ARYL-TRIAZENE-1-OXIDES FOR TREATING INFLAMMATORY DISEASES

John L. Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sept. 6, 1974, Ser. No. 503,580
Int. Cl.² A61K *31/655*
U.S. Cl. 424—226 **7 Claims**

1. The method of treating an inflammatory condition which comprises administering to a subject suffering from such condition a compound of the formula



wherein
R is C_1–C_3 alkyl,
R_1 is hydrogen or C_1–C_3 alkyl,
Z is —CH—, and
R_2 is hydrogen, C_1–C_3 alkyl, C_1–C_3 alkoxy or trihalomethyl, in an amount sufficient to be effective against the inflammation.

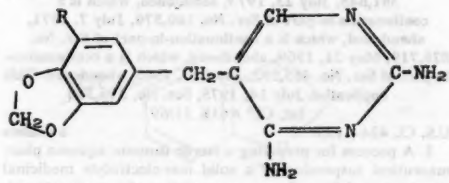
3,962,435

COMBINATION OF OXYTETRACYCLINE AND 2,4-DIAMINO-5-(3-ALKOXY-4,5-METHYLENEDIOXYBENZYL)PYRIMIDINE

Emanuel Grunberg, North Caldwell, and Max Hoffer, Nutley, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 404,953, Oct. 10, 1973, which is a division of Ser. No. 203,869, Dec. 1, 1971, Pat. No. 3,787,409. This application Dec. 9, 1974, Ser. No. 531,135
Int. Cl.² A61K *31/65*
U.S. Cl. 424—227 **3 Claims**

1. A therapeutic antibacterial composition comprising from about 1 to about 50 parts of oxytetracycline and one part of a pyrimidine of the formula



wherein R is lower alkoxy, or acid addition salts thereof with pharmaceutically acceptable acids.

3,962,436

PHARMACEUTICAL COMPOSITIONS HAVING CONTROLLED RATE OF GASTRO-INTESTINAL ABSORPTION

Toshio Nakamura, Ibaraki; Tadao Maeda, Ibaraki; Hiroshi Takenaka, Ibaraki, and Yoshiya Yamahira, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Division of Ser. No. 40,358, May 25, 1970, Pat. No. 3,849,558. This application Aug. 22, 1974, Ser. No. 499,572
Claims priority, application Japan, June 3, 1969, 44-43895; Jan. 30, 1970, 45-8619
Int. Cl.² A61K *31/615, 31/635, 31/525, 47/00*
U.S. Cl. 424—233 **8 Claims**

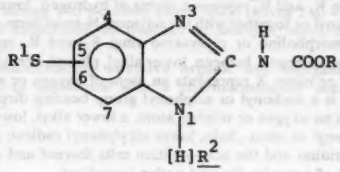
1. A pharmaceutical composition having a controlled gastro-intestinal absorption rate of a therapeutically active agent selected from the group consisting of chloramphenicol, chloramphenicol palmitate, riboflavin, riboflavin butyrate, sulfisoxazole, salicyclic acid, indomethacin and pharmaceutically acceptable water soluble salts thereof, said composition comprising a therapeutically effective amount of said therapeutically active agent and an equivalent or more by weight to said therapeutically active agent of N-α-methylbenzyl linoleamide.

3,962,437
5(6)-BENZENE RING SUBSTITUTED BENZIMIDAZOLE-2-CARBAMATE DERIVATIVES HAVING ANTHELMINTIC ACTIVITY

Colin C. Beard, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 371,365, June 19, 1973, Pat. No. 3,901,901. This application Apr. 7, 1975, Ser. No. 566,014
Int. Cl.² C07D 513/08
U.S. Cl. 424—246 **13 Claims**

1. A compound selected from the group of compounds represented by the formula:



where R is lower alkyl group having 1 to 4 carbon atoms; R^1 is a fused, bicyclic heterocylic ring moiety represented by the formula:

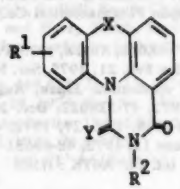
where X and Y are independently —C—C—, —C=C—, —C—C—C, —C—C=C, or C=C—C, provided that at least one of X or Y has 3 carbon atoms, said heterocyclic ring moiety being optionally substituted with one or more alkyl having 1 to 4 carbon atoms, phenyl, alkoxy having 1 to 4 carbon atoms, or hydroxy radicals; R^2 is hydrogen, carboxylic acyl having 1 to 6 carbon atoms, carbalkoxy having 2 to 7 carbon atoms, carbamoyl, or alkylcarbamoyl wherein the alkyl portion thereof has 1 to 4 carbon atoms; the R^1 substitution being at the 5(6)-position of the benzimidazole nucleus; the pharmaceutically acceptable salts thereof.

3,962,438
ANTI-ARTHRITIC 1H-PYRIMIDO-(5,4,3-KL)PHENOTHIAZINE-1,3(2H)-DIONES AND 1-THIONES

Charles E. Berkoff, Huntingdon Valley; Blaine M. Sutton, Hatboro, and Joseph Weinstock, Phoenixville, all of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Jan. 7, 1975, Ser. No. 539,208
Int. Cl.² A61K 27/00; C07D 513/22
U.S. Cl. 424—247 **12 Claims**

1. A compound of the formula:



in which:
X is S, SO or SO_2;
Y is O or S;
R^1 is hydrogen, halogen, lower alkyl, lower alkoxy, trifluoromethyl or nitro; and
R^2 is hydrogen, lower alkyl, hydroxy(lower)alkyl, dihydroxy(lower)alkyl or phenyl(lower)alkyl.

12. A method of treating arthritis which comprises administering internally to an animal subject an amount of a compound as claimed in claim 1 sufficient to inhibit arthritis.

3,962,439
OXYGEN-TRANSFERABLE EMULSION

Kazumasa Yokoyama, Suita; Koichi Yamanouchi, Sakai; Ryoichiro Murashima, Kashihara, and Ryozo Watanabe, Takatsuki, all of Japan, assignors to The Green Cross Corporation, Japan

Filed Feb. 4, 1974, Ser. No. 439,638
Claims priority, application Japan, Oct. 5, 1973, 48-112047
Int. Cl.² A61K 31/535, 31/445, 31/335, 31/35
U.S. Cl. 424—248 **19 Claims**

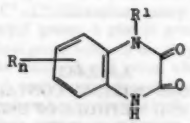
1. A stable emulsion in a physiologically acceptable aqueous medium of an oxygen-transferable saturated perfluorocarbon compound having 9 to 11 carbon atoms and a particle size of about 0.05 to about 0.3 μ, which comprises said perfluorocarbon compound, a phospholipid as emulsifier, and at least one fatty acid compound as emulsifying adjuvant selected from the group consisting of fatty acids having 8 to 22 carbon atoms, physiologically acceptable salts and monoglycerides thereof, the perfluorocarbon compound being at least one member selected from the group consisting of perfluoro alkylcyclohexane having 3 to 5 carbon atoms in the alkyl, perfluorodecalin, perfluoro methyldecalin, perfluoro alkyltetrahydropyran having 4 to 6 carbon atoms in the alkyl, perfluoro alkyltetrahydrofuran having 5 to 7 carbon atoms in the alkyl, perfluoro alkylpiperidine having 4 to 6 carbon atoms in the alkyl, perfluoro alkylmorpholine having 5 to 7 carbon atoms in the alkyl, perfluoro trialkylamine, perfluoro (diethylcyclohexylamine), or perfluoro (dioxaalkane), said emulsion being suitable for use as a blood substitute.

3,962,440
QUINOXALINE COMPOUNDS AS HYPNOTIC AGENTS

Roger L. St. Clair, New Palestine, and Thomas D. Thibault, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 26, 1973, Ser. No. 427,948
Int. Cl.² A61K 31/495
U.S. Cl. 424—250 **22 Claims**

1. A method for causing a hypnotic effect in a warm-blooded animal which comprises administering to a warm-blooded animal suffering from insomnia an effective amount of an active agent selected from the group consisting of a compound of the formula



wherein n represents 0, 1, or 2; each R independently represents
1. loweralkyl of C_1–C_4,
2. loweralkoxy of C_1–C_4,
3. loweralkylthio of C_1–C_4,
4. cyclopropyl,
5. bromo,
6. chloro,
7. fluoro,

8. nitro,
9. cyano,
10. fluoroalkyl of C_1–C_2,
11. amino, or
12. amino mono or disubstituted with loweralkyl of C_1–C_4, each independently selected;

subject to the limitation that R can represent bromo or chloro only when *n* represents 2 and one R represents a moiety other than bromo or chloro; and R^1 represents

1. H or
2. methyl;

and a pharmaceutically acceptable alkali metal or alkaline earth metal salt.

3,962,441
BENZOXAZOLE DERIVATIVES IN TREATING INFLAMMATION, PAIN AND FEVER

Delme Evans, Chalfont St. Peter; David William Dunwell, Camberley, and Terence Alan Hicks, Farnborough, all of England, assignors to Lilly Industries, Ltd., London, England

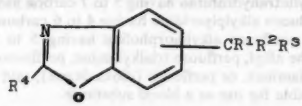
Division of Ser. No. 356,251, May 5, 1973, Pat. No. 3,912,748. This application June 17, 1975, Ser. No. 587,758

Claims priority, application United Kingdom, May 18, 1972, 23409/72

Int. Cl.[2] A61K *31/42, 31/44, 31/495*

U.S. Cl. 424—250 **1 Claim**

1. Method of treating an animal suffering from inflammation, algesia and/or pyreticosis which comprises administering to said animal an effective dose of a compound of the formula:



wherin the group $—CR^1R^2R^3$ is in the 5- or 6-position of the benzoxazole nucleus, wherein R^4 is cyclohexyl, furyl, thienyl, pyridyl, pyrazinyl, phenyl or phenyl substituted in any available position by one or two substituents selected from halogen, nitro, amino, hydroxy, C_1–C_4 alkoxy, C_1–C_3 alkyl-CO, C_1–C_4 alkyl sulphonyl, or substituted in two adjacent positions by methylene, or ethylene-dioxy, R^1 and R^2 are independently hydrogen, methyl or ethyl and R^3 is:

i. the group $—COOR^5$, where R^5 is C_1–C_4 alkyl; or
ii. the group $—CO—R^6$, where R^6 is —NHOH or $—NH_2$; or
iii. the group $—CH_2OR^9$ where R^9 is hydrogen or C_1–C_4 alkyl; or
iv. the group —COOH or an alkali or alkaline earth metal, aluminum or ammonium salt thereof.

3,962,442
FUNGICIDAL COMPOSITIONS CONTAINING 2-AMINO PYRIMIDINES AND METHODS OF USING THE SAME

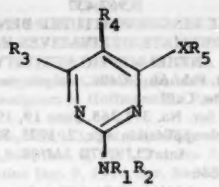
Brian Kenneth Snell, and Ranajit Ghosh, both of Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 623,810, March 17, 1967, abandoned. This application Jan. 26, 1971, Ser. No. 109,931

Int. Cl.[2] A01N *9/00, 9/22, 9/28*

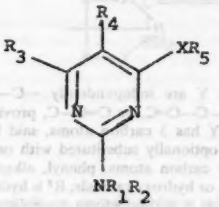
U.S. Cl. 424—251 **10 Claims**

1. A fungicidal composition comprising, as active ingredient, a fungicidally effective amount of a pyrimidine derivative selected from the group consisting of compounds having the formula:



wherein R_1 and R_2 represent atoms of hydrogen, lower alkyl, halophenyl or together with the adjacent N-atom form a piperidino, morpholino or piperazino ring; R_3 and R_4 represent atoms of hydrogen, halogen, lower alkyl, phenyl, benzyl, lower alkenyl or nitro; X represents an atom of oxygen or sulphur; and R_5 is a carbonyl or sulphonyl group bearing directly, or through an oxygen or sulphur atom, a lower alkyl, lower alkenyl, phenyl or nitro-, halo, lower alkylphenyl radical; or furyl or piperidino and the acid-addition salts thereof and a major amount of a carrier for said active ingredient.

7. A method of combating undesired fungal infections in plants which comprises applying to the locus of the plant a fungicidally effective amount of a pyrimidine derivative selected from the group consisting of compounds having the formula:



wherein R_1 and R_2 represent atoms of hydrogen, lower alkyl, halophenyl or together with the adjacent N-atom form a piperidino, morpholino or piperazino ring; R_3 and R_4 represent atoms of hydrogen, halogen, lower alkyl, phenyl, benzyl, lower alkenyl or nitro; X represents an atom of oxygen or sulphur; and R_5 is a carbonyl or sulphonyl group bearing directly, or through an oxygen or sulphur atom, a lower alkyl, lower alkenyl, phenyl or nitro-, halo-, lower alkyl-phenyl radical; or furyl or piperidino and the acid-addition salts thereof.

3,962,443
ANTIBACTERIAL PHARMACEUTICAL COMPOSITIONS AND PROCESSES FOR PREPARATION THEREOF

Shinsaku Minami, Yamato-Kouriyama; Jun-ichi Matsumoto, Takatsuki; Kazuyo Kawaguchi, Nara; Shinsaku Mishio, Osaka; Masanao Shimizu, Kobe; Yoshiyuki Takase, Amagasaki, and Shinichi Nakamura, Takatsuki, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

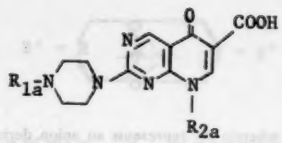
Division of Ser. No. 386,626, Aug. 8, 1973, Pat. No. 3,887,557. This application Feb. 21, 1975, Ser. No. 551,923

Claims priority, application Japan, Aug. 14, 1974, 47-81288; Dec. 19, 1972, 47-128022; Dec. 22, 1972, 48-269; Dec. 26, 1972, 48-3108; Dec. 27, 1972, 48-570; May 25, 1973, 48-58900; June 19, 1973, 48-69651

Int. Cl.[2] A61K *31/505*

U.S. Cl. 424—251 **3 Claims**

1. An antibacterial pharmaceutical composition comprising as an active ingredient a compound present in a pharmaceutically effective amount of the formula



wherein R_{1a} is a moiety selected from one of the group consisting of hydrogen, alkyl having 1 to 4 carbon atoms, hydroxyalkyl having 2 to 4 carbon atoms, phenyl or propargyl, R_{2a} is a moiety selected from one of the group consisting of alkyl having 1 to 4 carbon atoms, alkyl having 2 to 4 carbon atoms substituted by hydroxy or halogen, vinyl, allyl, or benzyl;

or pharmaceutically effective organic and inorganic salts thereof, in admixture with a pharmaceutically acceptable adjuvant.

3,962,444

USE OF 4-THIOCYANO-QUINAZOLINES AS FUNGICIDES

Antonius Gerhardus Maria Willems, van Houtenlaan, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

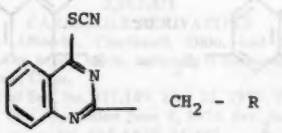
Division of Ser. No. 384,685, Aug., 1973, Pat. No. 3,888,857. This application Mar. 19, 1975, Ser. No. 559,823

Claims priority, application Netherlands, Aug. 9, 1972, 7210866

Int. Cl.[2] A01N *9/22, 17/00, 17/10*

U.S. Cl. 424—251 **4 Claims**

1. A fungicidal preparation comprising a fungicidally effective amount of a 4-thiocyano-quinazoline of the formula



wherein R is a member selected from the group consisting of fluoro and difluoromethyl and a carrier therefore.

3,962,445

ANTI-ALLERGENIC CARBOSTYRIL DERIVATIVES

Derek Richard Buckle, Redhill; Barrie Christian Charles Cantello, Horsham, and Harry Smith, Maplehurst, near Horsham, all of England, assignors to Beecham Group Limited, Sussex, England

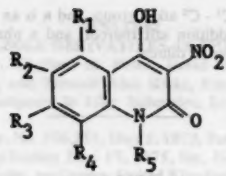
Division of Ser. No. 469,623, May 13, 1974. This application Jan. 29, 1975, Ser. No. 545,100

Claims priority, application United Kingdom, May 19, 1973, 24000/73; May 22, 1973, 24317/73

Int. Cl.[2] A61K *31/47*

U.S. Cl. 424—258 **58 Claims**

1. A pharmaceutical composition useful for treating allergic conditions in humans which comprises an anti-allergenic amount of a compound of the formula:



or a pharmaceutically acceptable nontoxic salt thereof, wherein R_1, R_2, R_3 and R_4 are hydrogen, lower alkyl, lower alkoxy, phenoxy, benzyloxy, phenyl, benzyl, pyridyl, hydroxy, nitro, or halogen or any two of R_1, R_2, R_3 and R_4 together with the carbon atoms to which they are attached form a fused phenyl or a fused 1,2-cyclohexenylene moiety, and R_5 is hydrogen, lower alkyl, phenyl or benzyl, in combination with a pharmaceutically acceptable nontoxic inert diluent or carrier.

3,962,446

ANALGESIC COMPOSITIONS CONTAINING 2-CYANOALKYLBENZOMORPHAN DERIVATIVES AND SALTS THEREOF

Toshio Atsumi, Saitama; Kenji Kobayashi; Yoshiaki Takebayashi, both of Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

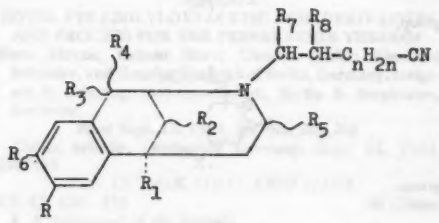
Continuation-in-part of Ser. No. 404,984, Oct. 10, 1973, abandoned, which is a division of Ser. No. 255,805, May 22, 1972, Pat. No. 3,793,332. This application Nov. 13, 1974, Ser. No. 523,412

Claims priority, application Japan, May 21, 1971, 46-34896; Dec. 20, 1971, 46-103839

Int. Cl.[2] A61K *31/485*

U.S. Cl. 424—260 **16 Claims**

1. An analgesic composition comprising an analgesically effective amount of at least one 6,7-benzomorphan derivative of the formula:



wherein R is a hydrogen atom, a hydroxyl group, a C^1 - C^3 alkoxy group or a C^1 - C^3 alkanoyloxy group; R_1 is a hydrogen atom, a C^1 - C^6 alkyl group, a phenyl group, a halophenyl group, an alkylphenyl group wherein the alkyl moiety has 1 to 3 carbon atoms, an alkoxyphenyl group wherein the alkoxy moiety has 1 to 3 carbon atoms, a trifluoromethylphenyl group, an alkylthiophenyl group wherein the alkylthio moiety has 1 to 3 carbon atoms or a group of the formula (C_mH_{2m-p+1}) - $(R_9)_p$ wherein m is an integer of 1 – 6, p is an integer of 1 – 2 and R_9 is a C^1 - C^3 alkoxy group; R_2 is a hydrogen atom or a C^1 - C^3 alkyl group; R_3 is a hydrogen atom, a C^1 - C^3 alkyl group, a phenyl group or an alkoxyphenyl group wherein the alkoxy moiety has 1 to 3 carbon atoms; R_4 is a hydrogen atom or a hydroxyl group, or R_3 and R_4 may form a C^1 - C^3 alkylidene group or a carbonyl group together with a carbon atom to which these substituents are bonded; R_5 is a hydrogen atom or a C^1 - C^3 alkyl group; R_6 is a hydrogen atom or a methyl group; R_7 and R_8 are independently a hydro-

gen atom or a C^1 - C^2 alkyl group; and *n* is an integer of 0 – 2; or an acid addition salt thereof, and a pharmaceutically acceptable carrier or diluent.

3,962,447

NOVEL PRO-DRUG DERIVATIVES OF PYRIDINIUM ALDOXIME TYPE CHOLINESTERASE REACTIVATORS AND METHOD OF USING SAME

Takeru Higuchi; Nicolae S. Bodor, and Efraim Shek, all of Lawrence, Kans., assignors to Interx Research Corporation, Lawrence, Kans.

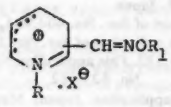
Division of Ser. No. 428,215, Dec. 26, 1973, Pat. No. 3,929,813. This application Aug. 11, 1975, Ser. No. 603,612

Int. Cl.² A61K *31/44*

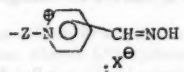
U.S. Cl. 424—263 **32 Claims**

16. A method for reactivating blocked cholinesterase in a warm-blooded animal as a result of anticholinesterase compound poisoning, which comprises:

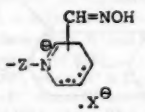
administering thereto, an effective cholinesterase reactivating amount of a pro-drug compound of the pyridine aldoxime (hydroxyiminomethyl pyridinium) type capable of reactivating blocked cholinesterase having the formula:



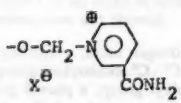
wherein R represents a member selected from the group consisting of an alkyl (C_1-C_4) group, a



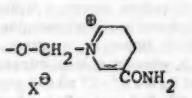
group, a



group,



group and a



group, wherein Z represents a member selected from the group consisting of a $-CH_2-CH_2-$ group, a $-CH_2-O-CH_2-$ group, a $-CH_2CH_2OCH_2CH_2-$ group, and a $-CH_2O-CH_2-CH_2-O-CH_2-$ group; wherein R_1 represents a member selected from the group consisting of a hydrogen atom, a methyl group, an acyl group and a

group; and wherein X^- represents an anion derived from a pharmaceutically acceptable acid addition salt.

3,962,448

8-ALKYL AND ALKENYL-10-HYDROXY-5H[1]BENZOPYRANOPYRIDINE DERIVATIVES HAVING POLYPHAGIC ACTIVITY

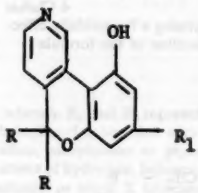
Clifton A. Baile, Glen Mills, Pa.; Paul E. Bender, Willingboro, N.J., and Bernard Loev, Broomall, Pa., assignors to Smith-Kline Corporation, Philadelphia, Pa.

Division of Ser. No. 450,118, March 11, 1974, Pat. No. 3,986,137. This application Apr. 21, 1975, Ser. No. 570,130

Int. Cl.² A61K *31/44*

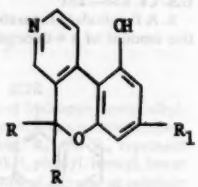
U.S. Cl. 424—263 **9 Claims**

1. A veterinary composition having polyphagic activity comprising as an active ingredient dispersed in an injectable or ingestible carrier a polyphagic but nontoxic quantity selected from the range of about 2.5–250 μ/kg. of body weight of a compound or a nontoxic, pharmaceutically acceptable salt thereof, said compound having the structure:



I

or



II

in which R is hydrogen, methyl or ethyl and R_1 is a straight or branched alkyl of from 1–20 carbon atoms.

3,962,449

CARDIOACTIVE BISPIDONES AND BISPIDINES

Fritz Binnig, Fussgoennheim; Manfred Raschack, Weisenheim am Sand, and Hans-Joerg Treiber, Bruehl, all of Germany, assignors to Knoll A.G. Chemische Fabriken, Ludwigshafen (Rhine), Germany

Filed June 10, 1975, Ser. No. 585,606

Claims priority, application Germany, June 14, 1974, 2428792

Int. Cl.² C07D *227/04*

U.S. Cl. 424—267 **15 Claims**

1. A compound of the formula

wherein R is =C=O or —CH_2—, R′ is lower alkyl optionally substituted by phenyl, and R″ is lower alkyl optionally substituted by one or two phenyl groups, with the proviso that R′ and R″ together contain at least six carbon atoms, and physiologically compatible salts thereof.

3,962,450

COMPOSITION AND METHODS FOR EFFECTING SEDATION

Lawrence J. Fischer, and John J. Ambre, both of Iowa City, Iowa, assignors to State of Iowa for use and benefit of the University of Iowa, Iowa City, Iowa

Filed Aug. 29, 1973, Ser. No. 392,571
Int. Cl.² A61K *31/445*
U.S. Cl. 424—267 3 Claims

1. A composition comprising an anesthetic dose of 4-hydroxy-2-ethyl-2-phenyl glutarimide and a pharmacologically inactive carrier therefor.

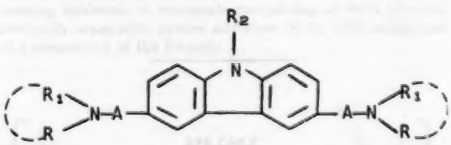
3,962,451

CARBAZOLE DERIVATIVES

William L. Albrecht, Cincinnati, Ohio, and Robert W. Fleming, Ann Arbor, Mich., assignors to Richardson-Merrell Inc., Wilton, Conn.

Division of Ser. No. 317,149, Dec. 21, 1972, Pat. No. 3,833,596. This application June 4, 1974, Ser. No. 476,331
Int. Cl.² A61K *31/445*
U.S. Cl. 424—267 7 Claims

6. A method of treating a host susceptible to invasion by pathogenic viral agents which comprises the daily prophylactic administration to said host of from 0.1 milligram to 500 milligrams per kilogram of body weight of a 3,6-bis-basic alkane carbazole having the formula



wherein A is a straight or branched alkylene chain having from 2 to 6 carbon atoms, R and R_1 are each selected from the group consisting of lower alkyl having from 1 to 6 carbon atoms, alkenyl having from 3 to 6 carbon atoms in which the unsaturation is in a position other than in the 1-position of the alkenyl group, and when R and R_1 are taken together with the nitrogen atom to which they are attached represent the pyrrolidinyl, morpholino or piperidino radical, R_2 is hydrogen or lower alkyl having from 1 to 4 carbon atoms or a pharmaceutically acceptable acid addition salt thereof.

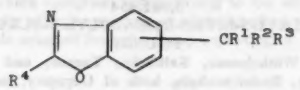
3,962,452

BENZOXAZOLE DERIVATIVES AS THERAPEUTICS

Delme Evans, Chalfont St. Peter; David William Dunwell, Camberley, and Terence Alan Hicks, Farnborough, all of England, assignors to Lilly Industries, Ltd., London, England

Division of Ser. No. 356,251, May 5, 1973, Pat. No. 3,912,748. This application June 17, 1975, Ser. No. 587,562
Claims priority, application United Kingdom, May 18, 1972, 23409/72
Int. Cl.² A61K *31/42, 31/44, 31/495*
U.S. Cl. 424—272 3 Claims

1. Pharmaceutical composition comprising an amount effective for treatment of inflammatory algesia and/or prepeticosis of a pharmacologically active compound in association with at least one pharmaceutically acceptable carrier therefor, said active compound being a compound of the formula:



wherein the group —$CR^1R^2R^3$ is in the 5- or 6-position of the benzoxazole nucleus, wherein R^4 is cyclohexyl, furyl, thienyl, pyridyl, pyrazinyl, or phenyl or phenyl substituted in any available position by one or two substituents selected from halogen, nitro, amino, hydroxy, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_3 alkyl-CO, C_1–C_4 alkyl sulphonyl or substituted in two adjacent positions by methylene- or ethylene-dioxy, R^1 and R^2 are independently hydrogen, methyl or ethyl and R^3 is:

i. the group —$COOR^5$, where R^5 is C_1–C_4 alkyl
ii. the group —CO—R^6 is —NHOH or NH_2; or
iii. the group —CH_2OR^9 where R^9 is hydrogen or C_1–C_4 alkyl; or
iv. the group —COOH or an alkali or alkaline earth metal, aluminum or ammonium salt thereof.

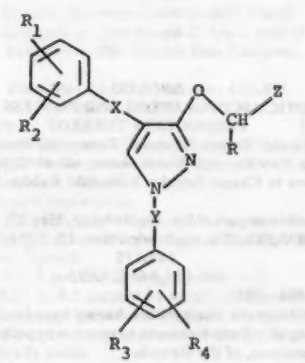
3,962,453

NOVEL PYRAZOLYLOXYACETIC ACID DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Hans Ahrens; Helmut Biere; Clemens Rufer; Eberhard Schröder, and Henning Koch, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

Filed Sept. 12, 1974, Ser. No. 505,208
Claims priority, application Germany, Sept. 14, 1973, 2347015
Int. Cl.² A61K *31/415*; C07D *231/18*
U.S. Cl. 424—273 40 Claims

1. A compound of the formula



wherein R is a hydrogen atom or alkyl of 1–4 carbon atoms; R_1, R_2, R_3 and R_4 each are a hydrogen atom, a halogen atom, alkyl of 1–4 carbon atoms or alkoxy of 1–4 carbon atoms; X and Y each are a bond joining the benzene ring to the pyrazole ring or methylene; and Z is a carboxyl or alkoxycarbonyl of 1–6 carbon atoms in the alkoxy group, and when Z is carboxyl physiologically acceptable, salts thereof with physiologically acceptable base.

40. A pharmaceutical composition in unit dosage form comprising an anti-inflammatory or antipyretic effective amount of compound of claim 1 in admixture with a pharmaceutically acceptable carrier.

3,962,454

BIS-(1-ALKYL-5-NITRO-IMIDAZOLYL-2-ALKYL)-COMPOUNDS

Erhardt Winkelmann, Kelkheim, Taunus, and Wolfgang Baether, Dreieichenhain, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

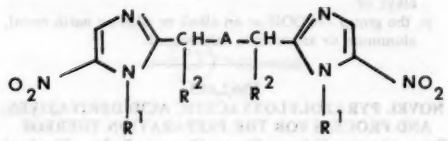
Filed Feb. 19, 1975, Ser. No. 550,919

Claims priority, application Germany, Feb. 21, 1974, 2408219

Int. Cl.² C07D *233/94*

U.S. Cl. 424—273 **6 Claims**

1. A bis-(1-alkyl-5-nitro-imidazolyl-2-alkyl)-sulfide, -sulfoxide, -sulfone or -disulfide of the formula



wherein R^1 is methyl or ethyl, R^2 is hydrogen or methyl and A is sulfur (-S-), sulfoxide (—SO—), sulfone ($-SO_2$) or disulfide (—S—S—).

3,962,455

ANTIBIOTIC ASCOFURANONE AND PROCESS FOR THE PRODUCTION THEREOF

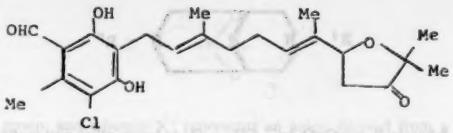
Hiroshi Sasaki; Tsuneo Okutomi; Tomoyoshi Hosokawa; Yoshiharu Nawata, and Kunio Ando, all of Tokyo, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 364,033, May 25, 1973, Pat. No. 3,873,529. This application Nov. 22, 1974, Ser. No. 526,175

Int. Cl.² A61K *31/35*

U.S. Cl. 424—285 **8 Claims**

1. A therapeutic composition having hypotensive activity comprising an effective amount to create a hypotensive effect of ascofuranone, of the formula:



in a pharmaceutically acceptable carrier.

3,962,456

SLIME CONTROL COMPOSITIONS AND THEIR USE

Paul Swered, Philadelphia, and Bernard F. Shema, Glenside, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 545,676, Jan. 30, 1975, abandoned. This application Aug. 11, 1975, Ser. No. 603,899

Int. Cl.² A01N *9/20*

U.S. Cl. 424—298 **8 Claims**

1. A composition for the control of the microorganism Aerobacter aerogenes in aqueous systems comprising a mixture of 1,3-dichloroacetone oxime acetate, with beta-bromo-beta-nitrostyrene wherein the weight ratio of the acetate to the nitrostyrene ranges from about 95:5 to about 10:90 respectively.

3,962,457

METHODS OF KILLING MITES USING S-β-NAPHTHYLMETHYL-N,N-DIMETHYLTHIOLCARBAMATE

Shigeki Wakamori, Shimizu; Haruki Ogawa, Fujieda; Masayoshi Yamaguchi, and Seigo Kanamori, both of Shimizu, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1975, Ser. No. 543,774

Claims priority, application Japan, Jan. 21, 1974, 49-8548

Int. Cl.² A01N *9/20*

U.S. Cl. 424—300 **3 Claims**

1. A method of killing parasitic mites on plants which comprises applying to said mites a miticidally effective amount of S-β-naphthylmethyl-N,N-dimethyl thiolcarbamate.

3,962,458

SYSTEMIC CONTROL OF ECTOPARASITES WITH PYRETHROIDS

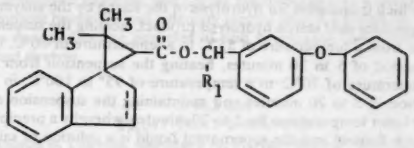
Michael Stanley Schrider, South Bound Brook, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 13, 1975, Ser. No. 550,106

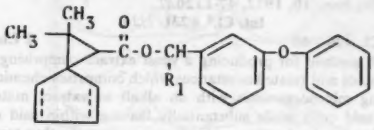
Int. Cl.² A01N *9/20*

U.S. Cl. 424—304 **10 Claims**

1. A method for the systemic control of ectoparasites which attack warm-blooded animals, comprising administering to said warm-blooded animals a systemically effective amount against the ectoparasites of a compound having a formula



and



wherein R_1 is hydrogen, cyano or ethynyl, and represents a single or double bond, and the optical and geometric isomers thereof.

3,962,459

LIPIDEMIA TREATMENT WITH P-PHENOXY-ALKYLPHENONE COMPOSITIONS

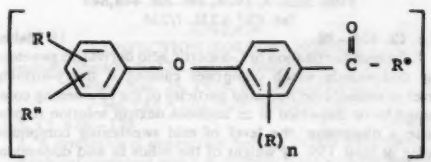
Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 394,181, Sept. 4, 1973, abandoned. This application Sept. 30, 1974, Ser. No. 510,477

Int. Cl.² A61K *31/125*; **C07C** *49/76*

U.S. Cl. 424—331 **10 Claims**

1. A pharmaceutical composition in unit dosage form for treating lipidemia in mammals comprising an inert pharmaceutically acceptable carrier and from 50 to 1500 milligrams of a compound of the formula



wherein

R° is branched alkyl of 3 to 5 carbon atoms,

R is hydrogen, alkyl of 1 to 4 carbon atoms or halo of atomic weight of from 18 to 36,

n is 1 or 2,

R′ is hydrogen, alkyl of 1 to 4 carbon atoms, halo of atomic weight of from 18 to 36 or alkoxy of 1 to 4 carbon atoms, and

R″ is hydrogen, alkyl of 1 to 4 carbon atoms, halo of atomic weight of from 18 to 36 or alkoxy of 1 to 4 carbon atoms.

3,962,460

ETHER COMPOUNDS AS INHALANT ANESTHETICS

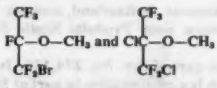
Louise S. Croix, Summit, and Alex J. Szur, North Plainfield, both of N.J., assignors to Airco, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 295,640, Oct. 6, 1972, abandoned. This application Aug. 20, 1974, Ser. No. 498,975

Int. Cl.² A61K *31/08*

U.S. Cl. 424—342 **6 Claims**

4. A method of anesthetizing an anesthetic-susceptible mammal which comprises administering to the mammal an anesthetically effective amount of aliphatic ether compound of a formula selected from the group consisting of



as an inhalation anesthetic while administering life-supporting amounts of oxygen.

3,962,461

BAIT INSECTICIDE FOR CARPENTER ANTS

William L. Brown, Jr., Ithaca, N.Y., and Barbara Brunhuber de Perez, Montreal, Canada, assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 481,465, June 20, 1974, abandoned. This application Aug. 28, 1975, Ser. No. 608,636

Int. Cl.² A01N *9/30, 17/10 , 17/14*

U.S. Cl. 424—352 **1 Claim**

1. A liquid bait insecticide for ants of the species *Camponotus herculeanus, Camponotus noveboracensis* and *Camponotus pennyslvanicus* which comprises the product obtained by sonicating a solution of recrystallized Mirex in xylene, in the presence of an emulsifier, said Mirex being present in a ratio of 1 gm. recrystallized Mirex to 9 ml. xylene, thereby forming a suspension, diluting the suspension with water in the ratio of 1 part suspension to 10 parts water, and mixing said diluted suspension with a honey - water mixture such that the product obtained contains 50–60% of the honey-water mixture, said Mirex being present in the amount of from 0.005 to 0.1% of the total weight of the product.

3,962,462

STABILIZATION OF DRY PET FOOD

Morris P. Burkwall, Jr., and Joseph C. Leyh, both of Barrington, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed May 31, 1974, Ser. No. 475,283

Int. Cl.² A23K *1/18*

U.S. Cl. 426—1 **10 Claims**

1. In the combination of dry pet food and semi-moist pet food, the improvement wherein the dry pet food comprises:

a. proteinaceous material;

b. amylaceous ingredients;

c. from 1 to 15 percent by weight of a member selected from the group consisting of sugar, sugar equivalents, and mixtures thereof;

d. from 1 to 3 percent by weight edible acid;

e. from 0.01 to 0.5 percent by weight antimycotic; and

f. wherein the moisture content of said dry pet food is less than 15 percent by weight and said dry pet food is microbiologically stable.

3,962,463

CHEWING GUM HAVING SURFACE IMPREGNATED, MICROENCAPSULATED FLAVOR PARTICLES

Frank Witzel, Spring Valley, N.Y., assignor to Life Savers, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 240,564, April 3, 1972, abandoned. This application Mar. 19, 1975, Ser. No. 559,850

Int. Cl.² A23G *3/30, 3/00*

U.S. Cl. 426—5 9 Claims

1. A chewing gum stick having a thickness within the range of from about 1250 to about 2300 microns and having solid flavor particles printed on at least one surface thereof, said flavor particles penetrating the surface thereof to a depth of within the range of from about 35 to about 230 microns, the interior of the stick being substantially free of flavor particles, said flavor particles providing an amount of flavor within the range of from about 0.14 to about 0.54% by weight of said stick.

3,962,464

PROCESS FOR PREPARING A BUTTER-LIKE DAIRY PRODUCT

Tomaso Sozzi, Lausanne, Switzerland, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Continuation-in-part of Ser. No. 274,116, July 21, 1972, abandoned, which is a continuation-in-part of Ser. No. 49,989, June 25, 1970, abandoned. This application Mar. 18, 1974, Ser. No. 452,318

Int. Cl.² A23C *15/12, 7/00*

U.S. Cl. 426—43 5 Claims

1. A process for preparing a butter-like dairy product which comprises the steps of pasteurising a cream containing not more than 40% by weight of fat, centrifuging the pasteurised cream and recovering a concentrated cream containing 50 to 60% by weight of fat, adding skimmed milk in quantity such that the fat content of the final product will be between 47 and 56%, heating the cream to between 85° and 93°C in 5 to 60 seconds, adding an acid substance in quantity such as to bring the pH of the final product to between 5.2 and 5.6, said addition being made under conditions such that the temperature of the product after said addition is at least 85°C, said acid substance being selected from the group consisting of an acid culture of a microorganism producing a butter flavour and an edible acid together with a butter flavour, cooling the resulting mixture to a temperature between about 2° and 10°C and holding the product at this temperature for at least 24 hours, the quantity of acid substance added when an acid culture being from 1 to 5% by weight and when an edible acid being from 0.05 to 0.2% by weight, said percentages being based on the weight of the final product.

3,962,465

METHOD OF PRODUCING STARCH HYDROLYSIS PRODUCTS FOR USE AS A FOOD ADDITIVES

Manfred Richter; Friedrich Schierbaum, both of Potsdam; Siegfried Augustat, Potsdam-Rehbrucke, and Klaus-Dieter Knoch, Berlin, all of Germany, assignors to Akademie der Wissenschaften der DDR, Berlin, Germany

Filed Aug. 27, 1973, Ser. No. 391,711

Int. Cl.² C12D *13/02*

U.S. Cl. 426—48 12 Claims

1. Method of producing a starch hydrolysis product having a dextrose equivalent of at least 5% but below 25% and which forms with water, white, glossy thermoreversible gels having a neutral taste, which are stable to freezing and defrosting and the consistency of which can be varied from pasty to cutting hard, comprising suspending in water a starch or water soluble starch derivative in a concentration of 15–50% by weight and the starch-hydrolyzing enzyme bacterial α-amylase in a concentration within a range which is optimum for hydrolysis of the starch by the enzyme to produce said starch hydrolysis product, adjusting the pH of the suspension to a value of about 7, which is optimum for hydrolysis of the starch by the enzyme to produce said starch hydrolysis product, heating the suspension from a temperature of 55°C to a temperature of 70°C. in a period of 5 to 30 minutes, heating the suspension from a temperature of 70°C. to a temperature of 95° to 100°C. in a period of 5 to 20 minutes and maintaining the suspension at the latter temperatures for 5 to 20 minutes, whereby a precipitant is formed and the supernatant liquid is a solution of said starch hydrolysis product, and separating the precipitant from the supernatant liquid.

3,962,466

METHOD FOR TREATMENT OF MICROORGANISMS

Yutaka Nakabayashi, Fukuoka, Japan, assignor to Dai-Nippon Sugar Manufacturing Co., Ltd., Tokyo, Japan

Division of Ser. No. 414,576, Nov. 9, 1973. This application May 22, 1974, Ser. No. 472,327

Claims priority, application Japan, Nov. 10, 1972, 47-112026; Nov. 10, 1972, 47-112027

Int. Cl.² A23L *1/28*

U.S. Cl. 426—60 2 Claims

1. A method for producing a yeast extract comprising nucleic acids and related substances which comprises chemically treating microorganisms with an alkali to extract material from said cells while substantially leaving within said cells protein contained within said cells, separating the thus treated microorganism cells from a waste liquor and adjusting said waste liquor to a pH of from 1 to 7, said alkali treatment being carried out by autolyzing the microorganisms with alkali at a pH of 7.0 to 10.5 and at a temperature of 25° to 65°C for a period of from 16 hours to 10 minutes or by treatment with alkali at a pH of from 10.5 to 12.9 at a temperature below 30°C for a period of about 4 minutes to 6 hours.

3,962,467

PROCESSES OF DRYING YEAST

Sidney Burrows, Tillicoultry, Scotland, assignor to The Distillers Company (Yeast) Limited, Morden, England

Filed July 22, 1974, Ser. No. 490,442

Claims priority, application United Kingdom, July 23, 1973, 34895/73

Int. Cl.² C12C *11/30*

U.S. Cl. 426—62 10 Claims

8. A method in which active dried yeast is made by forming yeast particles containing less than 50% by weight dry matter and which are less than 1.7 mm in diameter by comminution in a mill or by spray drying and then drying these particles to a dry matter content of at least 94% by weight in a fluidised bed using warm air, and in which the yeast temperature is below 50°C. until the dry matter content is above 80% by weight and is from above 50° and no greater than 60°C. for a period of 10 to 45 minutes at the end of the drying.

3,962,468

SPRAY-DRIED L-ASPARTIC ACID DERIVATIVES

LaMonte D. Pischke, and Myron D. Shoaf, both of Danbury, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 7, 1974, Ser. No. 448,845

Int. Cl.² A23L *1/236*

U.S. Cl. 426—96 18 Claims

1. Process for fixation of L-aspartic acid derivative sweetening compounds which comprises causing a slurry-forming level of undissolved hydrated particles of the sweetening compound to be dispersed in an aqueous dextrin solution to produce a dispersion, the level of said sweetening compound being at least 15% by weight of the solids in said dispersion, the level of said undissolved sweetening compound being a major amount of the total level of said sweetening compound in said dispersion and the dispersion being maintained at a temperature low enough to assure the existence of at least a part of the sweetening compound as discretely distributed

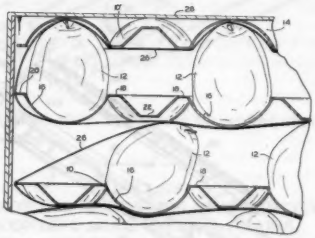
undissolved particles, and drying the dispersion to a moisture content below 5% and a density greater than 0.2 grams per cc. to encapsulate the particles of said sweetening compound in said dextrin.

3,962,469

FRUIT TRAY PACKAGE

Roland B. Leavens, and Mark G. McNair, both of Hood River, Oreg., assignors to Diamond Fruit Growers, Inc., Hood River, Oreg.

Filed Feb. 22, 1974, Ser. No. 444,971
Int. Cl.² B65B *23/00, 25/04*
U.S. Cl. 426—108 4 Claims



1. A package comprising a carton including a bottom wall and top wall:

a plurality of trays of molded sheet material positioned in stacked relationship in said carton,

each tray being formed to define a plurality of parallel rows of upwardly facing object receiving pockets and bridge portions between at least some of said pockets, and rounded objects susceptible to damage during shipment and having predetermined minimum and maximum diameters positioned in said pockets,

said pockets having a depth less than the mean diameter of said objects whereby said objects project substantially above the upper surface of said tray,

the surface portions of the tray beneath said pockets extending beneath said bridge portions,

the pockets of each row of a said tray being staggered with respect to each next adjacent row and with respect to the pockets of each tray immediately above and below said tray whereby the pockets of a tray will project downwardly between the objects in the next lower tray,

and a cover of flexible material secured only to opposite edges of each tray, said cover having sufficient length between said edges to permit the said bridge portions of a superposed tray to engage at least some of the objects on the tray immediately beneath, and to permit the pocket portions of said superposed tray to depress the said cover between each of said objects and render said cover taut and partially envelope each of the objects on said lower tray so as to snugly hold the said objects in position on said lower tray thereby to minimize damage to the said objects during shipping of the carton.

3,962,470

CONFECTION HOLDING DEVICE

James E. Stucker, 9212 Chiswell, Dallas, Tex. 75238

Filed Nov. 25, 1974, Ser. No. 527,075
Int. Cl.² A23G *9/26;* B65D *85/78*
U.S. Cl. 426—135 1 Claim

1. A symmetrical confection holding device comprising:

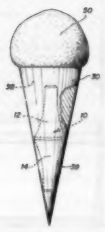
a conical container which is partially filled with confection,

a central body portion formed from an inedible rigid material and having a circular cross section defining a circumference substantially equal to the circumference of the midregion of said conical container, such that the periphery of said central body portion engages the inner surface of the midregion of the conical container when positioned within the conical container to thereby divide the conical container into first and second chambers, said confection filling said first chamber,

fist and second elongate members formed from an inedible rigid material and extending in opposite directions from and perpendicularly with respect to said central body portion, said first and second elongate members having the same length,

said elongate members being symmetrical about said circular cross section of said central body portion with each member being operable for use as a handle, said elongate members being configured such that said holding device may be deposited within the conical container in the correct position without regard to any required orientation of said elongate members,

one of said elongate members extending into said first chamber when positioned within the conical container to extend into and support the confection filling said first chamber,



the distal end of said one elongate member extending into said first chamber being positioned substantially below the end of the portion of the conical chamber which receives the confection,

the other of said elongate members extending into the second chamber within the conical container to serve as a downwardly extending handle for supporting the confection when the conical container is removed therefrom,

the distal end of said other elongate member extending substantially towards the apex of the conical container and engaging the side wall thereof and thereby orienting the circular cross section of the central body portion transversely relative to the axis of the cylindrical container, the end of each of said symmetrical elongate members having a beveled surface, whereby the beveled surface of the one of said elongate members extending into said second chamber snuggly engages the inner surface of the conical container near the apex portion of the conical container.

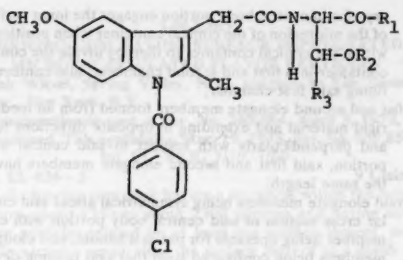
3,962,471

INDOLYLACETYLAMINO ACID DERIVATIVES, PROCESS FOR THEIR PREPARATION, AND PHARMACEUTICAL COMPOSITIONS

Helmut Biere; Hanns Ahrens; Clemens Rufer; Eberhard Schroder, and Henning Koch, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

Filed Mar. 12, 1975, Ser. No. 557,515
Claims priority, application Germany, Mar. 15, 1974, 2413125
Int. Cl.³ C07D *209/28*
U.S. Cl. 424—274 13 Claims

1. An indolylacetylamino acid derivative of the formula



wherein R_1 is OH, NH_3, NHR_4 or OR_4, wherein R_4 is alkyl of 1–4 carbon atoms, or benzyl; R_2 is a hydrogen atom, alkyl of 1–4 carbon atoms, or benzyl; and R_3 is a hydrogen atom or methyl, and the physiologically acceptable salts thereof with bases.

3,962,472

METHOD OF INHIBITION OF WARMED-OVER FLAVOR IN UNCURED MEATS

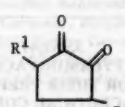
Anibal Torres, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed June 26, 1975, Ser. No. 590,599

Int. Cl.² A23L 1/31, 1/22; A23B 4/14

U.S. Cl. 426—281 **14 Claims**

1. An improved method for inhibiting the development of warmed-over flavor in uncured meat, which comprises adding to the uncured meat from about 25 to 250 parts by weight per million parts by weight of meat of a compound of formula (I):



(I)

wherein R is selected from the group consisting of methyl and ethyl; and R^1 is selected from the group consisting of hydrogen, methyl and ethyl.

3,962,473

METHOD OF MAKING CRUST LIQUEURS BY ANNULAR FLOW COOLING OF THE HOT AQUEOUS FILLING LIQUID

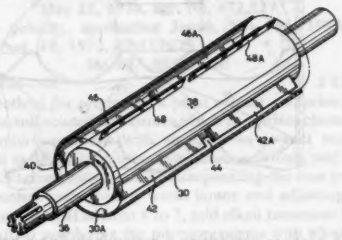
Dimitre Lilov, Milan, Italy, assignor to P. Ferrero & C. S.p.A., Alba (Cunea), Italy

Filed Oct. 25, 1973, Ser. No. 409,542

Claims priority, application Italy, Oct. 26, 1972, 70375/72; Dec. 27, 1972, 71089/72

Int. Cl.² A23G 3/20

U.S. Cl. 426—282 **9 Claims**



1. In a method of making crust liqueurs by preparing a hot aqueous sugar solution, cooling the hot solution to below the melting point of chocolate thereby to supersaturate the solution, depositing the cool solution into preformed chocolate shells, and sealing the shells with a chocolate cover, the improvement comprising cooling the said hot solution in at least one cooling stage by causing the latter to flow in said stage in the form of an annular flow from an inlet end to the outlet end of a heat exchanger having at least one cooled smooth tubular surface surrounding said flow in contacting relationship thereto, and at the same time sweeping the solution over said tubular surface in a circumferential direction and in a continuous manner while positively defining said annular flow by a concentric rotor within said tube, then depositing the cooled supersaturated solution discharged at the said outlet end into the chocolate shells.

3,962,474

OLIVE STUFFING METHOD

William W. Smith, Santa Clara, Calif., assignor to FMC Corporation, San Jose, Calif.

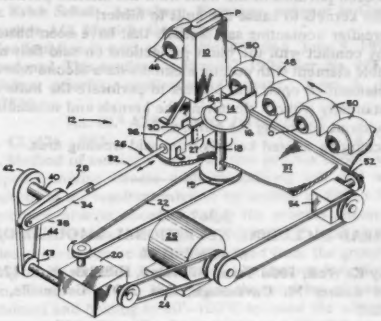
Continuation-in-part of Ser. No. 228,334, Feb. 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 16,832, March 5, 1970, abandoned. This application May 31, 1974, Ser. No. 475,325

Int. Cl.² A23B 7/02

U.S. Cl. 426—282 **7 Claims**

1. A method of stuffing pitted olives with pimiento, comprising the steps of drying the pimiento until the moisture content therein is in the range of about 20% to about 2% to facilitate handling of said pimiento when stuffing said pi-

miento into pitted olives, stuffing said dried pimiento into the pit cavities of olives, and reconstituting said dried pimiento



within the pitted olives by packing the stuffed olives in an aqueous solution.

3,962,475

METHOD FOR PRESERVING HIGH MOISTURE CONTENT AGRICULTURAL GRAINS

Joseph G. Forest, 303 Chemung St., P.O. Box 367, Waverly, N.Y. 14892, and Edward J. Czarnetzky, P.O. Box 330, Chazy, N.Y. 12921

Continuation-in-part of Ser. No. 466,777, May 3, 1974, abandoned. This application Feb. 13, 1975, Ser. No. 549,549

Int. Cl.[2] A21D *4/00*

U.S. Cl. 426—331 **2 Claims**

1. A method for preserving high moisture content agricultural grains which comprises applying to said grains, an antibacterial effective amount of a composition consisting essentially of:
   1. water;
   2. a member selected from the group consisting of formic acid, acetic acid, propionic acid, and phosphoric acid;
   3. a member selected from the group consisting of an alkali metal sulfate salt and an alkaline earth metal sulfate salt; and
   4. a member selected from the group consisting of a synthetic organic cationic or anionic surfactant selected from the group consisting of sodium dodecylsulfonethanolamine, ammonium dodecylbenzenepolyethersulfonate, and sodium dodecylbenzenepolyethersulfonate, whereby said surfactant enhances the penetration of said acid member of (2) into and throughout said high moisture content grain.

3,962,476

DOUGH PACKAGE CONTAINING TRIPLE SEALED ICING CUP AND METHOD OF PRODUCING THE SAME

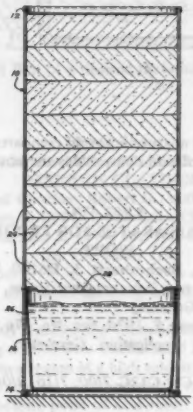
Charles H. Turpin, Minneapolis, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Division of Ser. No. 345,927, March 29, 1974, Pat. No. 3,851,757. This application Aug. 26, 1974, Ser. No. 500,423

Int. Cl.[2] B65B *25/00*

U.S. Cl. 426—398 **1 Claim**

1. A process of forming a two compartmented fiber dough can comprising providing a tubular fiber dough container body, providing a generally cylindrical cup adapted to contain a food product other than dough, the cup being formed from a thermoplastic resinous material compatible with food substances, said cup having an open end and a closed end and the open end having an enlarged diameter adapted to engage the inner surface of the cylindrical fiber body wall with an interference fit, forcing the cup into the tubular container body coaxially thereof closed end first until it has reached substantially the opposite end of the container body from which it was inserted whereby the open end of the cup faces toward the center of the container body, lowering duct means into the container body after the cup has been placed in the container, inserting a food product comprising icing into the cup through said duct means providing a circular divider wall of rigid sheet material having a circular peripheral edge adapted to engage in sealing relationship with the inner wall of the container body, the peripheral edge of the divider wall being of a larger diameter than the inside diameter of the container body to thereby provide an interference fit therebetween, forcing the divider wall into the tubular container body until the peripheral edge engages the upper open end of the cup and rests thereon to provide a circular seal therebetween, whereby



there is formed a triple seal comprising the interference fit between the divider wall and the inside wall of the container the interference fit between the divider wall and the open end of the cup and interference fit between the cup and the inner wall of the fiber can body, introducing a leavened dough product into the compartment on the opposite side of the divider wall from the cup and sealing the open end of the tubular container body by applying a top closure to the end of the body through which the dough product was inserted and allowing the dough to proof to develop a pressure between about 10 and 60 p.s.i. and the dough pressure exerts a downward force on the divider following proofing to maintain the seal between the divider and the cup.

3,962,477

STORING COMESTIBLES IN A CRYOGENIC LIQUID

David A. Dixon, One Arroyo Drive, Kentfield, Calif. 94904

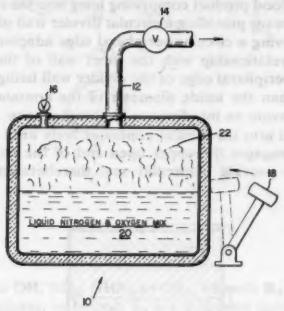
Continuation of Ser. No. 713,163, March 14, 1968, abandoned. This application June 28, 1971, Ser. No. 157,676

Int. Cl.[2] A23L *3/36*

U.S. Cl. 426—419 **4 Claims**

1. A process for inhibiting degradation of fresh perishable comestibles while stored in a substantially enclosed compartment, comprising the steps of: providing a chamber at least partially filled with a liquid mixture containing not less than 0.1 percent and not more than four percent liquified oxygen by total volume, the remainder being substantially all liquified nitrogen; at least periodically imparting vibration to said chamber by movement of a hammer against said chamber during the transportation thereof to maintain said liquified oxygen in uniform dispersion throughout said liquified nitrogen, said vibration being imparted to said chamber to produce vibraton of said liquid mixture at a frequency of from about 250 cycles per second to greater than 20,000 cycles per sec-

ond; storing comestibles in said compartment; vaporizing a portion of the liquified mixture; and introducing said vaporized portion of said mixture into said compartment during the continued storage of said comestibles therein.



3,962,478

METHOD AND APPARATUS FOR PRODUCING BEER WORT

Gerhard Hohlbein, Buchenhorst 3, D6100 Darmstadt, and Heinrich Huppmann, Schwarzacherstrasse, D871 Kitzingen (Main), both of Germany

Filed June 5, 1974, Ser. No. 476,708

Claims priority, application Germany, June 8, 1973, 2329360

Int. Cl.² C12C 7/00, 7/16, 9/00

U.S. Cl. 426—495 6 Claims

1. A method of separating mash into draff and clarified beer wort in a cylindrical upright vessel having an upper portion and a lower portion conically converging toward an apertured support forming the bottom of the vessel, comprising the steps of positioning a filter including a fibrous cellulose sliver layer on the apertured support; introducing a mash stream into the vessel near the upper portion tangentially against an inner circumferential side of the vessel so that solid components in the mash are forced against the side of the vessel due to centrifugal force; allowing the solids to settle and become deposited as a cake on the filter; filling the vessel to a predetermined level to provide above the cake a beer wort composed of two fractions, one of which is clear upper layer and the other of which is a lower layer containing suspended solids and being located above and proximal to the cake; applying suction to the apertured bottom of the vessel to draw the lower layer containing suspended solids downwardly through the cake to thereby intercept the suspended solids in the cake and accumulate clear wort below the filter until all of the lower layer is removed from the vessel; and withdrawing the upper clear layer in the vessel out of the same upwardly from above the cake.

3,962,479

METHOD FOR TREATING WHOLE KERNELS OF FEED GRAIN

Kenneth M. Coldren, Rte. No. 2, P.O. Box 116, Colfax, Ill. 61728

Division of Ser. No. 181,768, Sept. 20, 1971, Pat. No. 3,861,294. This application Oct. 15, 1974, Ser. No. 514,421

Int. Cl.² A23L 3/00

U.S. Cl. 426—532 20 Claims

1. A process for treating whole kernels of feed grain, comprising the steps of:

introducing whole kernels of feed grain into a treating area with said kernels having plasticized hulls enclosing interior portions;

contacting said whole kernels of feed grain at said treating area with blunt projections on a first movable element to loosen portions of the hulls from the interior portions of the kernels to cause the hulls to blister;

thereafter contacting said kernels that have been blistered by contact with the blunt projections on said first movable element with cutting members on a second movable element to open said blisters to perforate the hulls substantially without shattering the kernels and substantially without removing the hulls; and

discharging treated kernels from said treating area.

3,962,480

BREAD INCLUDING NUTRITIONAL AMOUNTS OF MAGNESIUM

Sidney K. Wolf, 1000 Texas Hill Road, Hillsdale, N.Y. 12529, and Robert M. Cavanaugh, Box 3891, Greenville, Del. 19807

Filed July 19, 1974, Ser. No. 490,117

Int. Cl.² A21D 2/02, 2/24

U.S. Cl. 426—549 9 Claims

1. In a bread made with wheat flour which is reduced in magnesium content relative to the wheat from which the flour is obtained, and to which magnesium has been added in an amount of from about 45 to 120 mg. per six ounces of the bread to replace magnesium removed during processing of the wheat, which magnesium renders the bread noticeably bitter in taste, the improvement wherein the bitter taste imparted by said magnesium is eliminated by including in the bread from about 0.5 to about 6.0 parts by weight of L-lysine monohydrochloride per part by weight of added magnesium.

3,962,481

MEAT-LIKE TEXTURED PROTEIN PRODUCT AND PROCESS

Surinder Kumar, Buffalo Grove, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed May 19, 1975, Ser. No. 578,741

Int. Cl.² A23J 3/00

U.S. Cl. 426—574 14 Claims

1. A process for forming a meat-like textured protein comprising:

A. solubilizing at least one protein in an aqueous alkaline medium to form a slurry of a protein;

B. precipitating the protein from the slurry;

C. recovering the precipitated protein;

D. shaping the recovered protein; and

E. texturizing the shaped protein by heating the shaped protein in a hydrophobic liquid.

3,962,482

CLEAR, ELASTIC, WATER GELS BASED ON CARRAGEENAN

Frederick W. Comer, and Clifford H. G. Strong, both of Guelph, Canada, assignors to Uniroyal, Ltd., Canada

Filed June 2, 1975, Ser. No. 583,025

Claims priority, application Canada, Mar. 24, 1975, 222872

Int. Cl.² A23L 1/04, 1/06

U.S. Cl. 426—575 12 Claims

1. A composition, soluble in water to produce a clear, elastic, water gel, comprising potassium-sensitive carrageenan in the form of an alkali metal or an ammonium salt, a non-toxic, water-soluble potassium salt other than potassium carrageenate in an amount equal to from about 10 to 110% by weight based on the weight of said potassium-sensitive carrageenan, said composition being free of polyvalent metal cations in amount more than about 0.01% by weight based on the combined weights of carrageenan or carrageenans present and said potassium salt.

3,962,483

PREPARATION OF MELT-RESISTANT PROCESS CHEESE

Max Erich Schulz, Ascheberg, Germany, assignor to Gervais-Danone AG, Munich, Germany

Continuation-in-part of Ser. No. 259,864, June 5, 1972, abandoned. This application Mar. 27, 1974, Ser. No. 455,284

Claims priority, application Germany, June 3, 1971, 2127531

Int. Cl.[2] A23C *19/00, 19/12, 19/14*

U.S. Cl. 426—582 6 Claims

1. Method of making a melt-resistant process cheese which comprises mixing cheese with emulsifying salt and water, pasteurizing the resultant mixture by heating to 80° to 110°C to produce process cheese, cooling the process cheese to a temperature within the range of 55° to 70°C, adding to the cooled process cheese a protein selected from the group consisting of egg albumin, lactalbumin, blood albumin and globulin in an amount of 2 to 20%, filling the resulting mixture into containers and heating to 80°–100°C to cause the added protein to coagulate in combination with the casein of the process cheese to solidify the process cheese.

3,962,484

METHOD FOR PREPARING LIQUID FEED SUPPLEMENTS CONTAINING CALCIUM CHLORIDE

Silvano Grosso, and Kenneth E. Nelson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 3, 1974, Ser. No. 475,367

Int. Cl.[2] A23K *1/22*

U.S. Cl. 426—658 6 Claims

1. In a method for preparing a liquid animal feed supplement substantially without occurrence of gelling or sedimentation, which supplement comprises water, soluble carbohydrate sources, at least one soluble elemental source selected from the group consisting of sources containing at least one of at least about 0.2% by weight of phosphorous and at least about 0.5% by weight of sulfur, and at least about 0.5% by weight of calcium as calcium chloride, and which supplement would contain at least one of gelled material and sedimentation upon the said calcium chloride content being incorporated thereinto as an aqueous solution, the improved sequence of steps comprising: A) first mixing said soluble elemental source with said carbohydrate source and water, and B) thereafter incorporating, with agitation, solid calcium chloride into the mixture of Step A to provide said calcium chloride in solution.

3,962,485

METHOD FOR FORMING UNIFORM STRESS-FREE THIN FILMS

Gordon Wood Anderson, Washington, D.C.; John E. Davey, Alexandria, Va., and Howard L. Grant, Bradenton, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 20, 1975, Ser. No. 624,201

Int. Cl.[2] B05D *5/12*

U.S. Cl. 427—9 7 Claims

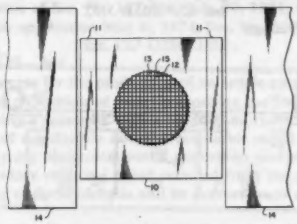
1. A method of forming uniform, stress-free, thin films of metals, semiconductors, and insulators which comprises:

supporting a collodion film on a fine mesh grid of a grid structure;

supporting said grid structure within a material deposition system;

depositing a film of a desired material of a desired thickness onto said collodion film on said grid;

subsequent to deposition of said film of a desired material onto said collodion, removing said collodion film thereby



leaving said film of a desired material supported by said grid.

3,962,486

NOVEL PROCESS FOR APPLYING THERMOSET RESINOUS COATINGS

Gene Gerek, and Coucher, Robert G., both of Salt Lake City, Utah, assignors to EPPCO, Salt Lake City, Utah

Filed Jan. 2, 1974, Ser. No. 430,094

Int. Cl.[2] B05D *1/08*

U.S. Cl. 427—34 12 Claims

1. A method of plasma spraying cured thermoset coatings comprising:

a. continuously introducing thermosettable resinous particles having a maximum thickness of less than about 100 microns into a region of a high velocity, plasma arc generated flame having a temperature substantially greater than the melting point of said resin, said particles being introduced externally to a device generating said plasma flame;

b. maintaining the residence time of said resinous particles in said flame region for a period sufficiently long to impart sufficient thermal and kinetic energy to said particles to polymerize the resins of said particles to a substantially cross-linked or cured state upon impact with a substrate, but wherein said thermal energy alone is insufficient to polymerize said resin to said cured state;

c. propelling said resinous particles towards a substrate with sufficient velocity to cause impact with sufficient force to cause said particles to flow upon said substrate to coat same with a continuous, thin coating; and

d. cooling said coated substrate at a rate sufficiently slow to assist the curing of said coating.

3,962,487

METHOD OF MAKING CERAMIC SEMICONDUCTOR ELEMENTS WITH OHMIC CONTACT SURFACES

Peter G. Fuller, Lakeville, Mass., and Hans A. Stoeckler, Woonsocket, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 3, 1975, Ser. No. 546,491

Int. Cl.[2] B05D *5/12*

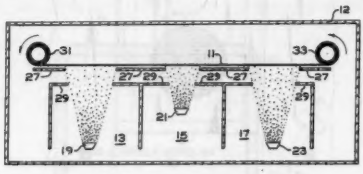
U.S. Cl. 427—82 6 Claims

1. A method for forming a ceramic semiconductor element having ohmic contact surfaces thereon comprising the steps of combining bentonite clay with a bonding composition consisting essentially of a dispersion of a solid particulate material in an aqueous phosphate-chromate-metal ion solution to form a thixotropic coating material, screen-printing the coating material on selected limited surfaces of a ceramic semiconductor body, and heating said coated ceramic semiconductor body for heat curing said coating material to form ohmic contact layers in adherent relation to said ceramic semiconductor body.

3,962,488
ELECTRICALLY CONDUCTIVE COATING

Frank H. Gillery, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 9, 1974, Ser. No. 495,974
Int. Cl.² B05D 5/12
U.S. Cl. 427—109 8 Claims

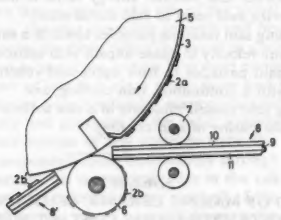


1. A method of making a coated article comprising:
a. vacuum depositing in a partial pressure of oxygen titanium oxide having the form TiO_x where x is from 1.3 to 1.7 on a substrate to form a transparent film having a thickness of from 200 to 500 Angstroms;
b. vacuum depositing silver or gold on the previously deposited TiO_x film at a rate sufficiently fast to form a transparent continuous metal film having a thickness of from 60 to 250 Angstroms and having a sheet resistance of less than 10 ohms per square, and
c. vacuum depositing in a partial pressure of oxygen titanium oxide having the form TiO_x where x is from 1.3 to 1.7 on the previously deposited metal film to form a transparent film having a thickness of from 200 to 500 Angstroms.

3,962,489
COPY SHEET AND METHOD OF PRINTING THE SAME

Gerhard Ritzerfeld, Schorlemer Allee 14, 1000 Berlin 33, Germany

Filed Apr. 26, 1974, Ser. No. 464,705
Claims priority, application Germany, May 17, 1973, 2325439; July 5, 1973, 2334689
Int. Cl.² B41M 5/04, 5/22
U.S. Cl. 427—144 5 Claims



1. A copy sheet adapted for receiving images by transfer from a master sheet upon which master sheet mirror relief images formed from a composition consisting essentially of a leucauramine dye and a binder therefor have been impressed, the image-receiving surface of the said copy sheet being coated with a layer of a composition consisting essentially of a binder and a substance selected from the group consisting of magnesium silicates, aluminum silicates, and magnesium aluminum silicates that reacts to form a colored image when brought into contact with a leucauramine dye and an alcohol-containing liquid, and the opposite surface of the said copy sheet being coated with a layer of a composition consisting or carboxymethylcellulose or particles of zinc oxide or barium sulfate and a binder therefor consisting of starch or a copolymer of vinyl chloride and vinyl acetate, which opposite surface layer is essentially free of substances that react to form a colored image when brought into contact with a leucauramine dye an an alcohol-containing liquid.

3,962,490
PREPARATION OF NICKEL AND CHROMIUM SUBSTRATES FOR CERAMIC COATING

Rodney L. Ward, Streetsboro, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

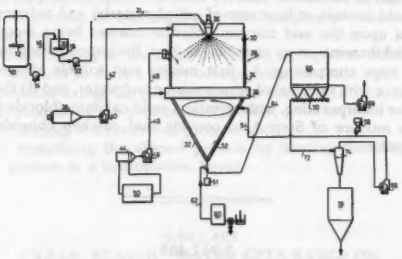
Filed Jan. 24, 1974, Ser. No. 436,180
Int. Cl.² C23C 3/04; C23D 5/00
U.S. Cl. 427—193 17 Claims

1. In the process of depositing a frit composition on a substrate and then heating to form a ceramic coat from the frit composition, the improvement prior to depositing said frit composition comprising using as the substrate a metallic workpiece that is not sufficiently electrochemically active to be coated by electrophoresis and that contains at least 10% by weight of a metal selected from nickel, chromium, and mixtures thereof, covering at least a portion of said substrate with a film of an oxide or a thermally decomposable compound of a transition metal selected from Group IIIB through Group IIB of the Periodic Table of The Elements, said compound being thermally decomposable at a temperature below the alloying temperature of the workpiece and transition metal, and then heating the workpiece to an alloying temperature within the range of about 1000°F to about 1800°F to alloy the transitional metal therewith.

3,962,491
PROCESS FOR PRODUCING RESIN-COATED SAND PARTICLES FOR USE IN SHELL MOLES

Tadashi Sato, Toyoda; Yasunobu Yamamoto, Kariya; Iwao Mizutani, Chiryu; Shigemitsu Yoshimi, and Tsutomu Teramoto, both of Toyoda, all of Japan, assignors to Aisin Chemical Company, Limited, Kariya, Japan

Division of Ser. No. 296,651, Oct. 11, 1972, abandoned. This application Feb. 8, 1974, Ser. No. 440,676
Int. Cl.² B05D 7/00, 3/02
U.S. Cl. 427—195 3 Claims



1. A process of producing resin-coated sand particles for use in shell molds comprising the steps of:
a. forming a liquid containing phenol-formaldehyde resin in an initial state of the condensation thereof;
b. spraying said liquid prior to complete condensation into a hot zone and maintaining in said hot zone an atmosphere at a temperature higher than the melting point of the initial-condensation product of the resin to form droplets of the liquid;
c. causing the droplets sprayed into said hot zone gravitationally to descend into a cold zone below said hot zone;
d. maintaining in said cold zone an atmosphere at a temperature lower than the melting point at said initial condensation product to solidify said droplets into generally spherical particles;

e. collecting the generally spherical particles solidified in said cold zone; and

f. mixing said resin particles with sand particles heated to a temperature higher than the melting point of said resin so as to coat the surface of each sand particle with said resin, said liquid being formed by condensing a phenol component selected from the group which consists of metal-alkyl phenols, metal-alkoxy phenols, meta-halogenated phenols, phenol and resorcinol with an aldehyde component selected from the group which consists of formaldehyde, formalin, peraformaldehyde and furfural in the presence of acidic or alkaline catalyst.

3,962,492

METHOD OF PROTECTING REFRACTORY LINING IN CONTAINERS FOR MOLTEN METAL

Eric Phelps, Birmingham, England, assignor to Foseco International Limited, Birmingham, England

Filed July 30, 1974, Ser. No. 493,151

Claims priority, application United Kingdom, Aug. 16, 1973, 38752/73

Int. Cl.² C21B *7/06;* **B29C** *1/04*

U.S. Cl. 427—204 **8 Claims**

1. A method of protecting a refractory lining in a container for molten metal, said method comprising the steps of

applying to substantially the entire refractory lining a first layer consisting essentially of particulate carbonaceous material and being at least substantially free of binding agent, and

applying a second layer over said first layer so that a duplex layer protects said lining, said second layer consisting essentially of bonded particulate refractory material.

3,962,493

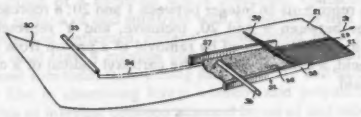
METHOD OF MAKING AN IRONER ROLL COVER

Sidney M. Faress, and Dallas C. Thomas, both of Hogansville, Ga., assignors to Uniroyal Inc., New York, N.Y.

Division of Ser. No. 360,817, May 16, 1973, Pat. No. 3,811,164, which is a continuation-in-part of Ser. No. 220,947, Jan. 26, 1972, abandoned, which is a continuation-in-part of Ser. No. 293,966, Oct. 2, 1972, abandoned. This application Nov. 2, 1973, Ser. No. 412,387

Int. Cl.² B05D *5/00, 1/32*

U.S. Cl. 427—259 **12 Claims**



1. The method of making an ironer roll cover from a single sheet of fabric made of a heatresistant fiber, the sheet having a length equal to the length of the ironer roll to be covered and a width sufficient to enable the fabric to be wound a plurality of times around the ironer roll, which comprises the steps of: impregnating a less than full width longitudinal portion of said sheet of fabric with a liquid coating composition comprising a thermosetting resinous material, the unimpregnated longitudinal portion being sufficiently wide to enable it to extend for at least one full turn around an ironer roll, and said impregnated longitudinal portion being sufficiently wide to enable it to extend for at least one full turn around said unimpregnated longitudinal portion, drying said sheet of fabric to remove volatiles therefrom, and subjecting said sheet of fabric to a curing operation for said resinous material to convert the same to thermoset condition and render said impregnated longitudinal portion capable of constituting a work-contacting surface of the ironer roll cover.

3,962,494

SENSITIZED SUBSTRATES FOR CHEMICAL METALLIZATION

Francis J. Nuzzi, Lynbrook, N.Y., assignor to Photocircuits Division of Kollmorgan Corporation, Glen Cove, N.Y.

Continuation of Ser. No. 167,506, July 29, 1971, abandoned. This application May 8, 1974, Ser. No. 468,077

Int. Cl.² C23C *3/02*

U.S. Cl. 427—304 **37 Claims**

1. A process for the production of an article catalytic to the electroless deposition of metal comprising the steps of:

a. treating a substrate with a liquid comprising the admixture of a reducible salt of a non-noble metal capable of catalyzing electroless metal deposition and at least one secondary reducing agent selected from the group consisting of formaldehyde and its precursors or derivatives; and

b. contacting the treated substrate of step (a) with a primary reducing agent comprising at least one member of the group consisting of borohydrides and borones, thereby rendering said substrate catalytic to the deposition of metal from an electroless metal deposition bath.

3,962,495

METHOD OF MAKING DUPLICATES OF OPTICAL OR SOUND RECORDINGS

Nathan Feldstein, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 304,595, Nov. 8, 1972, abandoned, which is a continuation-in-part of Ser. No. 862,019, Sept. 29, 1969, abandoned. This application Jan. 2, 1975, Ser. No. 537,846

Int. Cl.² C23C *3/02*

U.S. Cl. 427—306 **9 Claims**

1. A method of replicating information recorded as a surface relief pattern on a surface of a synthetic resinous positive photoresist material of the type normally attacked by alkaline media without detectable degradation of the photoresist material, comprising:

cleaning said surface,

sensitizing and activating said surface to form nuclei of an activating metal thereon, and

electrolessly depositing nickel or cobalt on said activated surface by immersing said surface at substantially room temperature in a single aqueous solution containing a nickel or cobalt salt, sodium pyrophosphate, ammonium hydroxide and a reducing agent which is either an amine borane or a hypophosphite salt, said solution having a pH between about 9 and 11.

3,962,496

COMPOSITION AND METHOD FOR NEUTRALIZING AND SENSITIZING RESINOUS SURFACES AND IMPROVED SENSITIZED RESINOUS SURFACES FOR ADHERENT METALLIZATION

Edward J. Leech, Center Island, N.Y., assignor to Photocircuits Division of Kollmorgen Corporation, Glen Cove, N.Y.

Filed Nov. 7, 1974, Ser. No. 521,866

Int. Cl.² C23C *3/02*

U.S. Cl. 427—306 **20 Claims**

1. In a process for producing a securely bonded layer of metal on a resinous surface by electroless metal deposition, the improvement which comprises the steps:

a. treating the substrate to be metallized with an oxidizing agent;

b. contacting the treated substrate with a primary neutralizer so as to effect bulk removal of said oxidizing agent from said substrate; and

c. contacting the substrate with a composition comprising hydrazine and a sequestering agent capable of forming soluble complexes with at least one member of the group consisting of chromium ions and manganese ions, all prior to electroless metal deposition on said substrate.

3,962,497

METHOD FOR TREATING POLYMERIC SUBSTRATES PRIOR TO PLATING

Warren Russell Doty, Royal Oak, and Timothy James Kinney, Berkley, both of Mich., assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed Mar. 11, 1975, Ser. No. 557,423
Int. Cl.² B05D 3/04, 3/10
U.S. Cl. 427—306 3 Claims

1. A method of treating a polymeric plastic substrate prior to plating a surface thereof, which comprises etching a surface of the substrate with an aqueous acid solution containing therein hexavalent chromium ions, rinsing and neutralizing, activating the etched substrate surface by contact with an acidic tin-palladium complex medium, rinsing the activated surface and accelerating said activated and rinsed surface of the polymeric substrate, the improvement which comprises contacting the polymeric substrate, in either or both the neutralizing and accelerating step with a hydroxylamine salt in an acidic solution containing therein hydrochloric acid, sulfuric acid or partially neutralized acidic salts whereby the hexavalent chromium ions from the etching step are reduced to the trivalent state.

3,962,498

METHOD FOR IMPROVING ADHESION BETWEEN ADHESIVES AND POLYESTER OR OTHER THERMOPLASTIC SUBSTRATES

William J. Owston, Edinboro, Pa., assignor to Lord Corporation, Erie, Pa.

Division of Ser. No. 300,818, Oct. 25, 1972, Pat. No. 3,838,093. This application Mar. 21, 1974, Ser. No. 453,493
Int. Cl.² C09J 7/02
U.S. Cl. 427—322 11 Claims

1. The method for improving the adhesion between an adhesive of the class of polymerizable liquid ethylenically unsaturated compounds containing a single terminal $>C=CH_2$ group and a substrate selected from the group consisting of solid polyester and other solid thermoplastic compositions comprising treating said substrate with a solution consisting essentially of from about 0.85 to about 40 parts by weight of a first partial urethane adduct and a second partial urethane adduct in 60 to 100 parts of a low boiling, inert organic solvent, said first partial urethane adduct being the reaction product of from about 0.1 to about 0.7 molar equivalent weight of a hydroxy functional monomer and 1 molar equivalent weight of polyisocyanate of tri or higher functionality, said second partial urethane adduct being the reaction product of from about 0.05 to about 0.35 molar equivalent of a hydroxylated butadiene polymer or copolymer and 1 molar equivalent weight of a polyisocyanate of tri or higher functionality, said first and second partial urethane adducts being combined in said solution in a proportion ranging from 1:0.2 to 0.2:1; applying an adhesive of the class of polymerizable liquid ethylenically unsaturated compounds containing a single terminal $>C=CH_2$ group to said treated substrate and curing said adhesive.

3,962,499

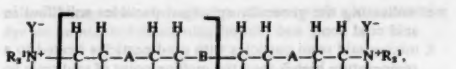
PROCESS FOR COATING METAL SUBSTRATES

Donald E. Brody, Verona, and Gabriel Karoly, Springfield, both of N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.

Filed Apr. 17, 1974, Ser. No. 461,491
Int. Cl.² B05D 3/02; B32B 15/08
U.S. Cl. 427—386 8 Claims

1. A method for preparing adherent, solventresistant coatings on metal substrates, said method consisting essentially of

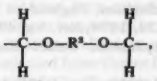
1. coating a surface of the substrate with an aqueous solution containing between 20 and 40% by weight of an epoxide-amine reaction product exhibiting the general formula



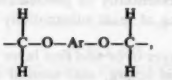
and

2. heating the coated substrate to between about 200° and 300°C. for a period of time sufficient to obtain a solvent-resistant coating,

wherein R^1 represents an alkyl radical containing between 1 and 20 carbon atoms, a hydroxyalkyl radical containing 2 or 3 carbon atoms, a cycloalkyl, aryl, alkaryl or an aralkyl radical; A is selected from the group consisting of alkylene radicals containing between 1 and 20 carbon atoms, cycloalkylene, arylene, alkarylene and aralkylene radicals, residues of diglycidyl ethers of dihydric alcohols,



wherein R^2 is an alkylene radical containing between 2 and 20 carbon atoms and residues of diglycidyl ethers of dihydric phenols,



wherein Ar represents an arylene or an alkarylene radical; B represents a divalent radical selected from the group consisting of $-O-[R^3O]_m-$,

and

wherein R^3 represents an alkylene radical containing between 2 and 20 carbon atoms, R^4 is selected from the same group as R^1; *m* represents an integer between 1 and 20; *n* represents an integer between 9 and 20, inclusive, and Y represents an anionic radical obtained by removal of a proton from a mineral acid, a sulfonic acid or the carboxyl radical of a carboxylic acid.

3,962,500

PROCESS FOR TREATING FIBERS

Charles Smith, Barry, Wales, assignor to Dow Corning Limited, Barry, Wales

Filed Dec. 12, 1974, Ser. No. 531,943
Claims priority, application United Kingdom, Dec. 18, 1973, 58604/73; Oct. 22, 1974, 45727/74
Int. Cl.² C08L 83/08
U.S. Cl. 427—387 15 Claims

1. A process for the treatment of synthetic fibres which comprises applying thereto a composition consisting essentially of the product obtained by mixing (A) 100 parts by weight of a polydiorganosiloxane having terminal silicon-bonded hydroxyl radicals and a molecular weight of at least 750, at least 50 per cent of the organic substituents in the polydiorganosiloxane being methyl radicals, any other organic substituents present being monovalent hydrocarbon radicals having from 2 to 30 carbon atoms, (B) from 0.5 to 15 parts by weight of an organosilicon compound selected from the

group consisting of organosilanes having the general formula $RSiR'_aX_{3-a}$ wherein R represents a monovalent radical composed of carbon, hydrogen, nitrogen and, optionally, oxygen which radical contains at least two amine groups and is attached to silicon through a silicon to carbon linkage, R' represents an alkyl radical or an aryl radical, each X represents an alkoxy or alkoxyalkoxy radical having from 1 to 14 inclusive carbon atoms, and *a* is 0 or 1, and partial hydrolysates of said organosilanes and (C) from 1 to 20 parts by weight of an organosilicon compound selected from the group consisting of silanes having the general formula R''_bSiZ_{4-b}, wherein R'' is a hydrogen atom, a monovalent hydrocarbon radical or monovalent halogenated hydrocarbon radical, Z is an alkoxy or alkoxyalkoxy radical having from 1 to 4 inclusive carbon atoms and *b* is 0 or 1 and partial hydrolysates of said silanes, and thereafter curing the applied composition whereby the resiliency of the synthetic fibres is improved.

3,962,501

METHOD FOR COATING OF CORROSION-RESISTANT MOLTEN ALLOY

Misao Ohbu, and Seijun Higuchi, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 424,704, Dec. 14, 1973, abandoned. This application Apr. 29, 1975, Ser. No. 572,843

Claims priority, application Japan, Dec. 15, 1972, 47-125987

Int. Cl.² B44D *1/52*; C22C *8/00*

U.S. Cl. 427—433 **5 Claims**

1. A method of coating a steel substrate with a corrosion resistant alloy, comprising immersing said steel substrate in an alloy bath, said bath being at a temperature in the range from 20° to 150°C above the melting point of said alloy and containing 75 to 5% by weight zinc, 25 to 95% by weight tin and 0.005 to 25% by weight of aluminum, based on the total bath composition.

3,962,502

PROCESS FOR CURING HEAT-CURABLE COATING

Robert Lee Rackley, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 12, 1974, Ser. No. 532,240

Int. Cl.² B44D *1/46*

U.S. Cl. 427—444 **5 Claims**

1. A process for curing a heat-curable coating on at least one surface of a substrate which comprises contacting the coated surface of said substrate with a polyolefin film having an embossed patterned surface characterized by a pattern height of at least 4 microns and a width at least coextensive with said substrate; superposing said substrate and said polyolefin film in alternating layers whereby said polyolefin film provides an interleaf between adjacent layers of said substrate; and heating said superposed substrate and polyolefin film to a temperature between about room temperature and below the softening temperature of said polyolefin film thereby to cure said coating on said substrate and allow air or vapors from said coating to flow through pathways provided between said embossed polyolefin film and said substrate.

3,962,503

DECORATIVE AND PROTECTIVE DEVICE FOR USE WITH A FLORAL CONTAINER

Mildred A. Crawford, 1206 Mathews St., Bowie, Tex. 76230

Filed Aug. 6, 1973, Ser. No. 385,957

Int. Cl.² B32B *3/04*; A01G *9/02*; A47G *7/08*; B65D *65/00*

U.S. Cl. 428—40 **2 Claims**

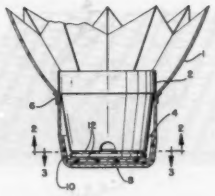
1. A device for use with a floral container to retain moisture within said cntainer, said device comprising:

a water resistant sheet of flat material large enough to cover a substantial portion of said container when hand formed about said container:

a layer of cementitious material deposited on said water resistant sheet:

a tray positioned on said cementitious layer such that said tray is secured to said water resistant sheet:

a pad of absorbent material having circumferentially spaced, pressure sensitive, permanently tacky, water-



proof, adhesive spots deposited on each side of said pad of absorbent material to adhesively secure said pad to said tray and to the lower face of the container;

removable Holland cloth positioned over said adhesive spots deposited on each side of said pad to provide a temporary covering therefor.

3,962,504

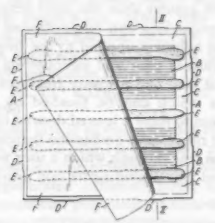
SELF-ATTACHING TILE OF A FIRED CERAMIC TILE BODY

Christopher John Sherwin, Newcastle, England, assignor to H & R Johnson-Richards Tiles Limited, Tunstall, England

Continuation-in-part of Ser. No. 496,549, Aug. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 307,402, Nov. 17, 1972, abandoned. This application Oct. 23, 1975, Ser. No. 624,872

Int. Cl.² B32B *3/00*; C09J *7/02*; E04B *5/00*; E04F *13/08*

U.S. Cl. 428—40 **2 Claims**



1. A self-attaching tile comprising a fired ceramic tile body having a rear surface which is provided with a series of fine parallel ribs but is otherwise substantially planar, a plurality of bodies of adhesive distributed over the rear surface of the tile body and projecting therefrom to a thickness of 0.75 to 1mm., the adhesive being a pressure-sensitive adhesive and being of a nature which retains said thickness of projection both prior to and after mounting of the tile without substantial flowing or spreading, each body of adhesive extending over a plurality of said ribs which are embedded therein, having a flat outer surface and being spaced from adjacent bodies of adhesive and from the edges of the tile body, and a peel-off film extending over said bodies of adhesive.

3,962,505
PLASTIC CONTACT LENS WITH MAGNETIC EMBEDDED METAL RING

Theodore P. Avery, 511 W. 6th St., Oil City, Pa. 16301

Division of Ser. No. 516,140, Oct. 18, 1974. This application Apr. 23, 1975, Ser. No. 570,942
Int. Cl.² B29D 11/00, 3/00; G02C 7/04, 7/06
U.S. Cl. 428—65 4 Claims

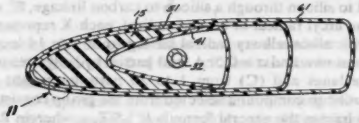
1. A set of components for enabling the fabrication of a contact lens comprising a lens blank block having an upper surface and a lower surface, a cylindrical well defined by a cylindrical well surface extending inwardly from said upper surface, an inner annular end wall surface adjacent the inner extent of said cylindrical well surface, a cylindrical pillar member extending axially within said cylindrical well surface outwardly from the inner annular end wall surface and having an upper termination below said upper surface of said lens blank block and a diameter less than the diameter of said cylindrical well surface, an annular ring member having an internal opening with a diameter slightly greater than the diameter of said cylindrical pillar member and an outer diameter slightly less than the diameter of said cylindrical wall surface, said annular ring member having a bottom face dimensioned and shaped to abuttingly engage the inner annular end wall surface and an upper face having a curvature approximately the same as the human eye, a cylindrical closure plug formed of the same material as said block having a cylindrical outer surface of a diameter slightly less than the diameter of said well, said cylindrical plug having an inner end surface of a configuration to coextensively engage said upper face of said annular ring member and an axial opening extending from its lower end and of cylindrical configuration having a diameter slightly greater than the diameter of said cylindrical pillar and of an axial length greater than the axial length of said pillar whereby said annular ring can be positioned over said pillar with a coating of adhesive applied to the ring and the pillar, the cylindrical closure plug and surrounding surfaces of the lens block so that heat and pressure treatment can provide a unitary structure which can be finished by a grinding and polishing operation to form a lens of desired optical character with said annular ring axially embedded therein and encircling the portion of the lens through which a user would look when wearing a finished lens providing by said grinding and polishing operation.

3,962,506
MULTI-CHAMBERED CELLULAR STRUCTURE AND METHOD FOR MANUFACTURE

Edmond O. Dunahoo, Long Beach, Calif., assignor to Fiber Science, Inc., Gardena, Calif.

Filed Apr. 29, 1974, Ser. No. 465,323
Int. Cl.² B32B 3/26
U.S. Cl. 428—158 15 Claims

1. A fiber-reinforced plastic article of manufacture having a multi-chambered, cellular structure with an outer shell having a fluid foil shape with a leading edge having a smooth radius of curvature and a trailing edge over a substantial portion of its length and containing therein an inner shell which extends between at least two opposite interior walls of said outer shell thereby defining at least two chambers within said article, the walls of said shells being composed of a plastic having embedded therein at least one layer of a continuous roving of a fibrous reinforcement material, said at least one layer comprising two adjacent thicknesses of said roving with

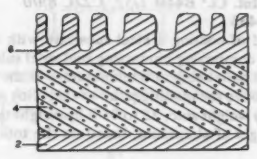


the rovings being in parallel alignment in each thickness and in diagonal orientation between thicknesses and with the rovings in the outer shell being continuous and unbroken over the leading edge of said foil shape.

3,962,507
VINYL STRUCTURE HAVING AN EMBOSSED TOP LAYER AND A FOAM BASE

Willard E. McCreary, Lancaster, and Elvin M. Weidman, Willow Street, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 312,813, Dec. 7, 1972, Pat. No. 3,887,409. This application Dec. 16, 1974, Ser. No. 532,840
Int. Cl.² B32B 3/26
U.S. Cl. 428—159 2 Claims



1. A vinyl structure which is composed of a foam back structure and an embossable top layer, both said foam back structure and said embossable top layer being formed of substantially the same composition of material, said embossable top layer being embossed and those regions of the foam backing which are directly below the deeply embossed portions of the embossed top layer being undamaged and without any foam cell structure collapse, said undamaged condition of the foam backing resulting from the fact that the top layer is formed from a plastisol resin which has a lower fusing temperature than the plastisol resin forming the foam backing, said top layer plastisol resin having a fusing temperature which is about 300°F. and said foam backing having a fusing temperature which is about 100°F. above the fusing temperature of the top layer plastisol resin.

3,962,508
THERMOPLASTIC RESIN TAPE FOR PACKAGING

Tokumitsu Nakanose, 1-17, Ikoma-cho, Kita, Nagoya, Aichi, Japan

Filed Mar. 26, 1975, Ser. No. 562,230
Int. Cl.² B65D 63/10
U.S. Cl. 428—169 4 Claims

1. A thermoplastic resin tape for packaging, said tape having a non-uniform thickness consisting of concave-convex portions except for areas of uniform thickness disposed in

spaced relation along the length of said tape at substantially regular intervals on the central part thereof.

3,962,509

WATERPROOF PAPERBOARD AND METHOD FOR PRODUCING SAME

Charles E. Thompson, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 475,016, May 31, 1974, abandoned, which is a continuation-in-part of Ser. No. 448,092, March 4, 1974, abandoned. This application Dec. 24, 1974, Ser. No. 534,241

Int. Cl.² B32B 3/28, 3/00

U.S. Cl. 428—182 17 Claims

1. A waterproof paperboard having a water pickup of less than 20% and a high wet strength, said waterproof paperboard being produced by a process consisting essentially of:

a. impregnating paperboard with a mixture consisting essentially of from about 10 to about 50 weight percent tung oil and from about 90 to about 50 weight percent paraffin wax; and,

b. heating said impregnated paperboard at a temperature from about 80° to about 163°C for a time to effect curing of said waterproof paperboard.

3,962,510

WALL COVERINGS AND METHOD OF MAKING THE SAME

B. Conley Worcester, East Brunswick, and Wayne W. Grobner, East Windsor, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 292,599, Sept. 25, 1972, abandoned. This application Oct. 16, 1974, Ser. No. 515,261

Int. Cl.² D03D 3/00

U.S. Cl. 428—245 11 Claims

1. A wall covering having a long dimension and a short dimension and comprising a laminate of a synthetic plastic facing material bonded to a woven fabric backing material, said facing material having a thickness between 0.002 inch and 0.008 inch, said backing material woven with warp yarns and filling yarns, each filling yarn comprising from about 10% to 40% by weight of thermoplastic fibers capable of being autogenously bonded to said facing material at or below the softening temperature of said facing material, the remaining fibers in each of said filling yarns and said warp yarns not being capable of being autogenously bonded to said facing material at or below the softening temperature of said facing material, said warp yarns lying in the direction of the long dimension and said filling yarns lying in the direction of the short dimension of said wall covering, whereby said wall covering is rendered more stiff and less flexible in the direction of its short dimension as compared to its long dimension.

3,962,511

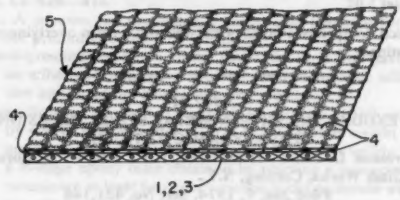
TEXTILE COMPOSITE STRUCTURE AND METHOD OF PREPARATION

Anthony J. Foti, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 21, 1974, Ser. No. 525,786

Int. Cl.² B29B 17/00; B29H 7/22; F16G 1/00

U.S. Cl. 428—246 8 Claims



1. A method of preparing a textile fabric composite structure which comprises the sequential steps of (A) applying a volatile organic solvent solution coat of a polyurethane reaction mixture to a textile woven fabric to substantially encapsulate the fibers of said fabric, (B) drying and at least partially curing said reaction mixture to provide a thin flexible polyurethane coat on said fibers having an average thickness in the range of about 1 to about 5 mils, (C) adhering an overlay of a flexible thermoplastic film, having a thickness in the range of about 10 to about 100 mils, to one surface of said encapsulated fabric and (D) pressing said thermoplastic into the interstices of said encapsulated fabric with a pressure in the range of about 10 to about 50 pounds per square inch, and applying heat from the encapsulated fabric side of the composite opposite its overlay surface to cure the encapsulating polyurethane and adhere said flexible overlay.

3,962,512

COMPOSITE LAMINAR STRUCTURE AND RELATIVE MANUFACTURING PROCESS

Marco Fontana, and Bruno Borca, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 352,219, April 18, 1973, abandoned. This application Dec. 23, 1974, Ser. No. 536,952

Claims priority, application Italy, May 22, 1972, 24655/72

Int. Cl.² B32B 17/02, 27/40

U.S. Cl. 428—290 6 Claims

1. A microporous article having a fibrous surface and physical characteristics which adapt it to replace natural leather in industrial applications comprising a non-woven polyamide, polyester or regenerated cellulose fabric saturated with a crosslinked microcellular polyurethane elastomer in which the cells are predominately closed non-intercommunicating cells, said article having a density of from 0.85 to 1.4 g/cm³, a hardness of from 85 to 95 Shore A, a tensile strength of from 1.5 to 2.5 kg/mm² and a water vapor permeability of about 30 to 100 g/m²/24 hours as determined by DIN 53333.

3,962,513

LASER TRANSFER MEDIUM FOR IMAGING PRINTING PLATE

Arnold C. Eames, Westbrook, Maine, assignor to Scott Paper Company, Philadelphia, Pa.

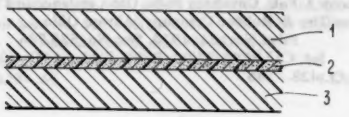
Filed Mar. 28, 1974, Ser. No. 455,594

Int. Cl.² G03G 5/00; G01D 15/34; B41M 5/26

U.S. Cl. 428—323 1 Claim

1. In a transfer film for use in making an imaged printing plate by directing laser energy through a transparent substrate

having thereon a coating comprising particles which absorb said laser energy and a self-oxidizing binder, the improvement



which comprises a layer of ink-receptive resin overlying said coating.

3,962,514

EXUDED TRANSITION METAL SPINEL FILMS ON GLASS-CERAMIC ARTICLES

Hermann L. Rittler, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,148
Int. Cl.² B32B 9/04, 17/06
U.S. Cl. 428—334 1 Claim

1. A glass-ceramic article having

a. a composition consisting essentially in weight percent on the oxide basis as calculated from the batch, of about 20–35% Al_2O_3, 5–35% B_2O_3, 28–60% MnO_2, 0–15% BaO, and 0–35% La_2O_3; and

b. an exuded transition metal-containing surface film ranging in thickness from about 0.1–4 microns composed predominantly of crystalline species selected from the group consisting of Mn_3O_4 and $Mn_2Al_2O_4$.

3,962,515

STRENGTHENED COMPOSITE GLASS ARTICLE AND METHOD OF PRODUCTION

William H. Dumbaugh, Jr, and Peter C. Schultz, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 492,441, July 29, 1974, abandoned. This application Aug. 21, 1975, Ser. No. 606,581
Int. Cl.² B32B 17/06, 17/12; C03C 3/04
U.S. Cl. 428—392 7 Claims

1. A composite glass article composed of a glass core portion encompassed within a compressively stressed exterior glass portion, the glass core portion consisting essentially of, in cation percent on an oxide basis, 65–92% SiO_2, 1–25% $AlO_{1.5}$, and 2–25% TiO_2, and the exterior glass portion being composed essentially of a vitreous silica type glass selected from the group consisting of fused quartz, fused silica, and 96% silica glass.

3,962,516

PRODUCTION OF POLYESTER TIRE YARN

Robert Moore Marshall, Chester, and Kimon Constantine Dardoufas, Richmond, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 412,368, Nov. 1, 1973, abandoned. This application June 4, 1975, Ser. No. 583,826
Int. Cl.² B32B 27/04
U.S. Cl. 428—394 4 Claims

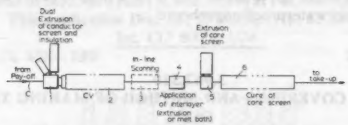
1. Synthetic filamentary yarn comprised of polyethylene terephthalate filaments which are first treated with from about 0.3 to about 0.6 weight percent based on the weight of the yarn of a liquid composition consisting essentially of about 10 to about 20 weight percent of said composition of each hexadecyl stearate and refined coconut oil, about 3.0 to about 6.0 weight percent of said composition of ethoxylated tallow amine, about 10 to about 20 weight percent of said composition of ethoxylated lauryl alcohol, about 8.0 to about 12.0 weight percent of said composition of sodium salt of alkylaryl sulfonate, about 1.0 to about 3.0 weight percent of dinonyl-sodium-sulfosuccinate, about 1.0 to about 3.0 weight percent of said composition of 4,4'-thio-bis(3-methyl-6-tert-butylphenol), about 35 to 50 weight percent of said composition of white mineral oil having a boiling point of between 510° and 620°F. wherein at least about 0.15 to about 0.30 weight percent is retained on said yarn, and then said yarn is treated with 0.5 to 1.5 weight percent based on the weight of the yarn of a polyalkylene glycol finish composition consisting essentially of a polyoxyethylated-polyoxypropylated monoether which is a condensation product of 40 to 60 percent ethylene oxide and 40 to 60 percent propylene oxide on a mol basis, terminated with an alcohol containing 3 to 5 carbon atoms, said polyoxyethylated-polyoxypropylated-monoether having a molecular weight of from 300 to 600 and a viscosity of from 75 to 300 S.U.S. at 100°F.

3,962,517

ELECTRIC CABLES

Stefan Verne, London, England, assignor to BICC Limited, London, England

Filed June 12, 1974, Ser. No. 478,623
Int. Cl.² H01B 9/02, 13/14
U.S. Cl. 428—383 21 Claims



1. A cable core comprising a conductor having an extruded dielectric of an insulating material selected from the group of insulating materials consisting of rubber and plastics materials, a dielectric screen comprising a layer of conductive or semi-conductive material selected from the group consisting of conductive and semi-conductive rubber and plastics materials and, interposed between and bonded to the extruded dielectric and the dielectric screen throughout substantially the whole length of the core, an intermediate layer having at least in a circumferentially continuous zone of the layer a cohesive strength substantially less than the cohesive strengths of the extruded dielectric and the dielectric screen and substantially less than the strengths of the bonds between the intermediate layer and the extruded dielectric and between the intermediate layer and the dielectric screen such that when stripping the dielectric screen from the core over a part of its length for jointing or terinating purposes separation takes place within the intermediate layer to leave a portion of the intermediate layer on the extruded dielectric.

3,962,518

COMPOSITE OF POLYESTER BONDED TO RUBBER, METHOD FOR MAKING THE SAME AND COMPOSITION

Richard M. Wise, Uniontown, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 310,525, Nov. 29, 1972, Pat. No. 3,861,980. This application Dec. 20, 1974, Ser. No. 534,951
Int. Cl.² B32B 27/34; D02G 3/00
U.S. Cl. 428—395 10 Claims

1. A bonded composite material comprising a polyester element embedded in a vulcanized rubber, said element containing a total of from about 3 to 7% by weight (dry) based on the weight of said element of an adhesive composition consisting essentially of a deposit of a heat set mixture of a major amount by weight of a rubbery vinyl pyridine copolymer and a minor amount by weight of a heat reactable 2,6-bis(2,4-dihydroxy phenylmethyl)-4-chlorophenol composition, said adhesive composition forming a bond between said element and said rubber, and said chlorophenol composition having been made by the process of first reacting about 2 mols of formaldehyde with 1 mol of parachlorophenol to provide

2,6-dimethylol-4-chlorophenol which then is reacted with about 2 mols of resorcinol.

3,962,519

RUBBER ARTICLE OR INSTRUMENT AND METHOD OF PRODUCING THE SAME

Werner Rüsch, Rommelshausen; Heinrich Beer, Geradstetten; Veronika Seeger, Stuttgart-Bad Cannstatt, and Manfred Walbel, Schornbach, all of Germany, assignors to Messrs. Willy Rusch, K.G., Germany

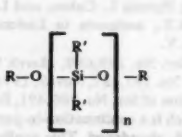
Continuation of Ser. No. 373,760, June 26, 1973, abandoned, which is a continuation of Ser. No. 158,067, June 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 818,247, April 22, 1969, abandoned. This application Apr. 22, 1974, Ser. No. 463,170

Claims priority, application Germany, Apr. 26, 1968, 1766265

Int. Cl.[2] **A61M** *25/00;* **A61B** *1/00, 17/00;* **B32B** *25/20*

U.S. Cl. 428—409 **10 Claims**

7. A medical or sanitary rubber instrument consisting of individual layers of a rubber material firmly adhering to one another, the rubber material at least in the layers disposed under the surface of said instrument containing, based on the amount of rubber within said rubber material, about 0.1 to 10% by weight of an organic silicon compound which can at least in part migrate within the rubber of said rubber material whereby a sufficient quantity of the silicon compound is present at the surface of the instrument to maintain a surface which is hydrophobic and repels water and material which might adhere thereto, said organic silicon compound having the general formula.



wherein R represents hydrogen, methyl, ethyl, propyl, butyl or $Si(CH_3)_3$, and R' represents hydrogen, methyl, ethyl or phenyl, and *n* represents a number which yields a molecular weight for said silicon compounds of more than 90,000; said organic silicon compound exhibiting a viscosity of at least 60,000 centistokes.

3,962,520

ADHESIVE COMPOSITION FOR FLEXIBLE PRINTED CIRCUIT AND METHOD FOR USING THE SAME

Tsutomu Watanabe; Shigenori Yamaoka, and Koichi Tanaka, all of Yokohama, Japan, assignors to Sumitomo Bakelite Company, Limited, Tokyo, Japan

Division of Ser. No. 423,708, Dec. 11, 1973, Pat. No. 3,896,076. This application Dec. 9, 1974, Ser. No. 530,986

Claims priority, application Japan, June 20, 1973, 48-68802

Int. Cl.[2] **E05B** *3/48, 3/96;* **C09J** *3/00*

U.S. Cl. 428—414 **20 Claims**

1. A process for producing a metal-clad laminate for a flexible printed circuit which comprises

heat-pressing together a plastic film and a metal foil having an adhesive composition therebetween to cure the adhesive and bond the plastic film and metal foil,

the adhesive composition comprising a mixture of 100 parts by weight of a polyester resin, 1 to 20 parts by weight of an isocyanate compound and 2 to 50 parts by weight of a B-stage epoxy resin obtained by reacting a compound containing at least two epoxy groups in the molecule with a compound having at least two active hydrogen atoms.

3,962,521

POLY(ETHER-URETHANE) COATING CURED WITH AN AMINOPLAST ON A SOLID SUBSTRATE

Wen-Hsuan Chang, Gibsonia, and Hartman, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 249,198, May 1, 1972, abandoned, which is a division of Ser. No. 839,648, July 7, 1969, abandoned. This application May 14, 1975, Ser. No. 577,382

Int. Cl.[2] **C08L** *68/20*

U.S. Cl. 428—423 **12 Claims**

1. A coated article comprising a highly extensible cured coating composition on a solid substrate wherein said coating composition comprises:

A. from 95 percent by weight to about 50 percent by weight, based on the combined weight of (A) and (B), of an ungelled, hydroxyl-containing urethane reaction product, having a hydroxyl value between about 10 and about 200, produced by the method comprising:

1. reacting an organic polyisocyanate with an active hydrogen-containing material selected from the group consisting of polyester polyols, low molecular weight monomeric diols, and diamines, thereby forming an isocyanato-terminated adduct, and

2. reacting said isocyanato-terminated adduct with polyether polyol, having an hydroxyl equivalent of at least about 100 and a glass transition temperature below about 25°C.,

whereby said active hydrogen-containing material provides hard segments in said urethane reaction product and whereby said polyether polyol provides soft segments in said urethane reaction product; and whereby said urethane reaction product has a major proportion of said soft segments and a minor proportion of said hard segments; and

B. about 5 percent to about 50 percent by weight, based on the combined weight of (A) and (B), of an aminoplast resin.

3,962,522

POLY(ESTERURETHANE) COATING CURED WITH AN AMINOPLAST ON A SOLID SUBSTRATE

Wen-Hsuan Chang, Gibsonia, and Marvis E. Hartman, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 347,022, April 2, 1973, abandoned, Continuation of Ser. No. 828,337, May 27, 1969, abandoned. This application Apr. 21, 1975, Ser. No. 569,895

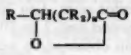
Int. Cl.[2] **C08L** *61/20, 61/26*

U.S. Cl. 428—423 **8 Claims**

1. A coated article comprising a solid substrate having thereon a cured coating comprising the reaction product of:

A. an ungelled hydroxyl-containing urethane reaction product of an organic polyisocyanate and a polyhydric material, wherein a major portion of said polyhydric material is a saturated polyester polyol; said polyester polyol being selected from the class consisting of:

1. condensates of
   i. an alcohol component having an average functionality of at least about 1.9, and
   ii. a saturated acid component consisting essentially of 1 or more monomeric carboxylic acids or anhydrides having 2 to 14 carbon atoms per molecule, said component having an average functionality of at least about 1.9; and
2. a lactone-polyester formed from reacting lactones or mixtures of lactones in which the lactone has the following structural formula:



wherein n is at least 4, at least n + 2R's are hydrogen, and the remaining R's are substituents selected from the group consisting of hydrogen, alkyl, cycloalkyl, alkoxy and single ring aromatic hydrocarbon radicals with a polyol or a hydroxy acid;

said polyhydric material containing a total of not more than one gram-mole of compounds having a functionality of 3 or more per 500 grams of polyhydric material; said urethane reaction product having a hydroxyl value of at least 10; and

b. an amine-aldehyde condensate.

3,962,523

VITREOUS COATING COMPOSITION

Ian George Robinson, Noble Park, Australia, assignor to Blythe Colours (Australia) Proprietary Limited, East Brighton, Australia

Filed Apr. 13, 1972, Ser. No. 243,846
Claims priority, application Australia, July 9, 1970, 1774/70
Int. Cl.² B32B 17/06; C03C 7/04, 5/00
U.S. Cl. 428—426 4 Claims

1. A composition adapted to be sintered on a substrate to form a vitreous enamel coating capable of enhancing oxidation of organic soils deposited thereon in the range of 300° F. to 550°F., consisting essentially of a comminuted mixture of previously smelted and quenched frit-producing material, and a separate oxidation inducing agent in the form of a silicate bearing ore selected from the group consisting of Rhodonite ($MnSiO_3$), Tephroite ($MnSiO_4$), Alleghanyite ($5MnO_2 \cdot 2SiO_2$), Spessartite [$Mn_3Al_2(SiO_4)_3$] and Sobralite [$(MnFeCaMg)SiO_3$] in which the proportion of oxidation inducing agent to frit in the comminuted mixture is in the range of 90:10 to 60:40 by weight.

3,962,524

GLASS FIBER-REINFORCED POLYAMIDE RESIN MOLDING MATERIAL

Akira Miyamoto; Mitsuyasu Nagano; Fumitaka Sato, and Kiyoshi Morishige, all of Hiratsuka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Sept. 30, 1974, Ser. No. 510,860
Claims priority, application Japan, Oct. 2, 1973, 48-110716
Int. Cl.² B32B 27/34
U.S. Cl. 428—435 4 Claims

1. A glass fiber-reinforced polyamide resin molding material, consisting essentially of a polyamide resin obtained by the condensation reaction of xylylene diamine with at least one member selected from straight-chain aliphatic α,ω-dicarboxylic acids having 6 to 12 carbon atoms and blended therewith, glass fiber in an amount of 5 to 50% by weight based on the total weight of the polyamide resin and the glass fiber.

3,962,525

HOT TOPPING

Dillwyn Morgan Davies, Birmingham, England, assignor to Foseco Trading Limited, Birmingham, England

Filed Oct. 8, 1974, Ser. No. 513,173
Claims priority, application United Kingdom, Oct. 17, 1973, 48420/73
Int. Cl.² B22D 7/10
U.S. Cl. 428—446 3 Claims

1. A hot top lining slab having on its inner molten metal-contacting face a coating of a mould flux, said coating consisting essentially of at least one material selected from the class consisting of fly ash, fly ash floaters, alkali metal silicates, alkaline earth metal silicates, alkali metal carbonates, alkaline earth metal carbonates, alkali metal halides and alkaline earth metal halides.

3,962,526

TISSUELESS PRE-PRINTED SPIRIT DUPLICATING MASTERS

Irving Panken, Dayton, Ohio, assignor to The Mazer Corporation, Dayton, Ohio

Filed July 23, 1974, Ser. No. 490,979
Int. Cl.² B41M 5/04, 5/18
U.S. Cl. 428—488 11 Claims

1. A tissueless pre-printed spirit duplicating master having reverse printed on the backside thereof a non-bleed, hot melt, spirit duplicating ink comprising 5–25% cetyl alcohol, 31–48% wax and 35–45% crystal violet.

7. A tissueless booklet of pre-printed spirit duplicating masters comprising a plurality of pre-printed spirit duplicating masters each having reverse printed on at least one side thereof, a non-bleed hot melt, spirit duplicating ink comprising 5–25% cetyl alcohol, 31–48% wax and 35–45% crystal violet, said plurality of pre-printed masters being bound along one edge to form said booklet.

3,962,527

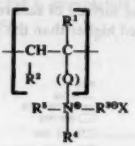
NOVEL POLYMERS AND PHOTOGRAPHIC ELEMENTS CONTAINING SAME

James R. King; Hyman L. Cohen, and Lewis M. Minsk, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

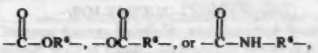
Division of Ser. No. 339,689, March 9, 1973, which is a division of Ser. No. 197,157, Nov. 9, 1971, Pat. No. 3,788,855, which is a division of Ser. No. 100,491, Dec. 21, 1970, Pat. No. 3,709,690, which is a continuation-in-part of Ser. No. 709,812, March 1, 1968, abandoned. This application Jan. 18, 1974, Ser. No. 434,748
Int. Cl.² B32B 27/08, 27/10
U.S. Cl. 428—500 3 Claims

1. An element comprising a support having a layer thereon which comprises a mixture of 1) a hydrophilic colloid and 2) a polymer comprising units represented by the following for-

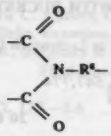
mula in copolymerized relationship with units of at least one other ethylenically unsaturated monomer:



wherein R^1 and R^2 are hydrogen atoms or lower alkyl groups and R^3 can additionally be a group containing at least one aromatic nucleus; Q can be a divalent alkylene radical, a divalent arylene radical, a divalent aralkylene radical, a divalent arylenealkylene radical,



wherein R^6 is an alkylene radical, or R^3 can be taken together with Q to form a

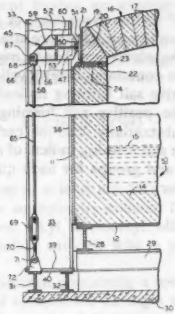


group; R^3, R^4 and R^5 can be lower alkyl or aryl, or R^3 and R^4 and the nitrogen atom to which they are attached can together with Q represent the atoms and bonds necessary to form a quaternized nitrogen-containing heterocyclic ring, and X is a monovalent negative salt forming radical or atom in ionic relationship with the positive salt forming radical; wherein said polymer is substantially free of carboxy groups and wherein the positive salt forming radical of said polymer comprises at least two aryl groups for each quaternary nitrogen atom in said polymer.

3,962,528
FURNACE SKEWBACK SUPPORT WITH BUCKSTAY PIVOT

Peter J. Wynne, Pittsburgh, Pa., assignor to Lectromelt Corporation, Pittsburgh, Pa.

Filed Feb. 7, 1975, Ser. No. 547,774
Int. Cl.² F27D 1/14
U.S. Cl. 13—35 **20 Claims**



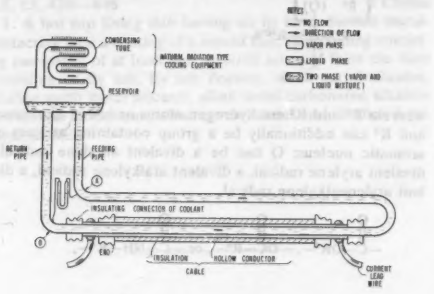
1. A refractory lined furnace comprising:
a sidewall and a hearth,
skewback refractory means disposed along the top of said sidewall,
an arched roof constructed and arranged for bearing against said skewback refractory means to obtain support for said roof,
support means adjacent said skewback refractory means and said sidewall, and
restraining means engaging said skewback refractory means and including bearing means for pivotally connecting said restraining means to said support means and for transferring outwardly directed forces from said skewback refractory means to said support means, said bearing means permitting relative pivotal movement between said restraining means and said support means without inducing forces in said skewback refractory means.

3,962,529
EVAPORATIVE COOLING POWER CABLE LINE

Hiroshi Kubo, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 187,256, Oct. 7, 1971, abandoned. This application Mar. 8, 1974, Ser. No. 449,570
Claims priority, application Japan, Oct. 7, 1970, 45-99805[U]; Nov. 26, 1970, 45-104270; May 1, 1971, 46-29008
Int. Cl.² H01B 7/34
U.S. Cl. 174—15 C **16 Claims**

1. An evaporative cooling power cable assembly comprising:
1. an electrically conductive member adapted to carry large amounts of electricity and
2. a closed loop cooling means including
a. a cooling duct in thermal contact with said electrically conductive member along at least a portion of the length of said electrically conductive member, said cooling duct having an inlet and an outlet;
b. a condenser;
c. a first tube joining said condenser to the inlet of said cooling duct;
d. a second tube, shorter than said first tube, joining said condenser to the outlet of said cooling duct; and
e. a refrigerant cooling fluid having insulating and liquescent properties contained within said cooling duct and said first and second tubes, the surface of said refrigerant cooling fluid being disposed higher than the inlet of said cooling duct,

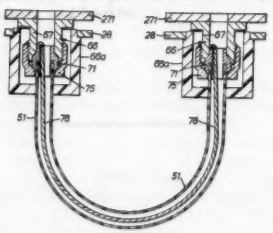


whereby said refrigerant cooling fluid will absorb heat and change state from a liquid at the inlet of said cooling duct to a gas at the outlet of said cooling duct as it travels the length of said cooling duct in a unidirectional flow, thereby creating a natural circulation cycle without forced circulation caused by a pump or the like.

3,962,530
HIGH-VOLTAGE LIQUID-COOLED APPARATUS AND SUPPLY LEADS THEREFOR

David William Jones, Liverpool, England, assignor to Triplex Safety Glass Company Limited, London, England

Filed Oct. 1, 1974, Ser. No. 510,965
Claims priority, application United Kingdom, Oct. 11, 1973, 47582/73
Int. Cl.² H01B 7/24
U.S. Cl. 174—15 C **8 Claims**



1. A high-voltage, liquid-cooled, vacuum apparatus, said apparatus comprising a wall defining a vacuum chamber, an exhaust connection in said wall to permit evacuation of said vacuum chamber, at least one high-voltage, liquid-cooled component located in said vacuum chamber, a source of high voltage located outside said vacuum chamber, a supply of cooling liquid also located outside said vacuum chamber, an electric conductor which is connected at one end to the said component and at its other end to the said source of high voltage and which passes through said wall of the vacuum chamber, and a cooling liquid supply pipe of electrically insulating material connected at one end to the said component and at its other end to said supply of cooling liquid, and which passes through said wall of the vacuum chamber, said electrical conductor being accommodated within said cooling liquid

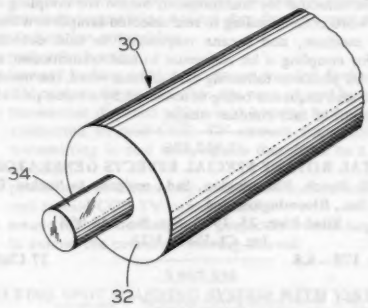
supply pipe throughout a length thereof extending from the connection of said conductor and pipe to the said component and through said wall of the vacuum chamber, whereby said conductor is completely separated from the vacuum in said chamber.

3,962,531

ELECTRICAL CONDUCTOR INSULATED WITH FILLED POLYMERIC COMPOUNDS

Ray Clarence Lever, Fairfield, and Edward Vincent Wilkus, Trumbull, both of Conn., assignors to General Electric Company, New York, N.Y.

Division of Ser. No. 273,156, July 19, 1972. This application July 29, 1974, Ser. No. 492,961
Int. Cl.² H01B 7/02
U.S. Cl. 174—110 PM 8 Claims



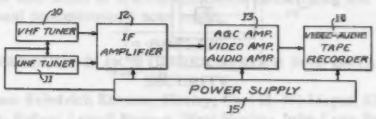
1. A metallic electrical conductor having an electrically insulating covering molded thereon formed of a compounded product comprising thermoplastic polymeric material and filler ingredients, and consisting essentially of particulate cohesive bodies of the compounded ingredients including the thermoplastic material and filler proportional in amounts ranging from at least 5 to about 200 parts by weight of the filler per 100 parts by weight of the polymeric material combined in a polyphase physical system of discontinuous phases interspersed with one another substantially comprising discrete blended phases of polymeric material and filler including stratified arrangements of a layer of filler particles adhered to a film-like layer of polymeric material, and interstitial phases of substantially polymeric material, said polymeric material and filler being combined to the extent that the blended phases contain a majority of greater than 50% of the filler having been assimilated with a majority of greater than 50% of the polymeric material while in a molten state, and said blended phases comprising fundamental units predominantly structured essentially of a stratified layer of the filler adhesively embraced by a film-like mass of polymeric material.

3,962,532

POWER SUPPLY FOR AN AUDIO-VIDEO RECORDING SYSTEM

Richard C. Aubert; George R. Dean, both of Chicago; James B. Ricks, Evanston, and John W. Wade, Mount Prospect, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Apr. 18, 1975, Ser. No. 569,346
Int. Cl.² H04N 7/00
U.S. Cl. 178—5.6 9 Claims



1. In a recording system of the type which records composite video and audio television signals onto a recording medium which includes a tuning and intermediate frequency section for receiving and converting transmitted television signals into composite video and audio signals and a recording device for recording the composite video and audio signals and having an input adapted for connection to an AC power source, the improvement of a power supply for activating the tuning and intermediate frequency section and the recording device to enable recording of the composite video and audio signals at preselected times comprising:

a timer having an input adapted for connection to an AC line voltage source, a switch coupled to said input and selectively operable for closing at a preselected time for providing said AC line voltage, and a receptacle coupled to said switch and adapted for receiving the recording device input for supplying the recording device with activating AC line voltage when said switch is closed;

rectifying means also coupled to said switch for converting said AC line voltage to a pulsating DC voltage; and

filtering means coupled to said rectifying means and to the tuning and intermediate frequency sections for providing the tuning and intermediate frequency sections with activating filtered DC voltage when said switch is closed; whereby,

when said switch is closed at said preselected time, the tuning and intermediate frequency sections are activated by said filtered DC voltage derived by said rectifying means and said filtering means from said AC line voltage provided by said timer switch to therby produce the composite video and audio signals, and the recording device is activated for recording the composite video and audio signals by said AC line voltage provided by said timer switch at said receptacle.

3,962,533

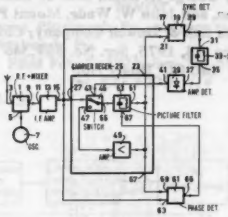
TELEVISION RECEIVER

Karl Frans Nickl von Nikelsberg, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 3, 1974, Ser. No. 466,712
Claims priority, application Netherlands, May 8, 1973, 6381
Int. Cl.² H04N 5/44
U.S. Cl. 178—5.8 R 2 Claims

1. A television receiver including a synchronous detector coupled to an output of an I.F. section and to an output of an I.F. picture carrier regenerator, the I.F. picture carrier regenerator comprising a change-over switch for changing over from an active to a passive regeneration state of the picture carrier regenerator and conversely, a picture carrier filter coupled to said change-over switch, and an amplifier coupled between said picture carrier filter and said change-over switch, an operation signal input of said change-over switch being coupled to an output of a tuning detection circuit, said tuning detection circuit providing a signal rendering the pic-

ture carrier regenerator passive in case of a large deviation of the intermediate frequency of a received signal relative to the

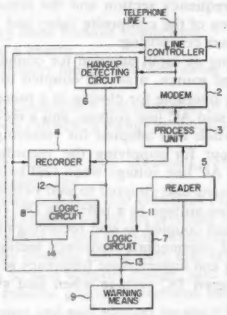


desired frequency and provides a signal rendering the picture carrier regenerator active in case of a small deviation.

3,962,534
FACSIMILE SET

Mutsuo Ogawa, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1974, Ser. No. 511,365
Claims priority, application Japan, Oct. 4, 1973, 48-111648
Int. Cl.² H04N *1/32*
U.S. Cl. 178—6 **8 Claims**



1. A first facsimile set of the type interconnecting with a second calling or called facsimile set through a telephone channel, said first set comprising:

a. a facsimile reader for scanning an image to be transmitted to the second set to convert said image into electrical signals;

b. a facsimile recorder for reproducing upon a recording sheet an image transmitted from the second facsimile set;

c. first means for detecting the hangup of the second calling or called facsimile which has been interconnected with the first set through the telephone channel;

d. second means for detecting whether or not an image to be transmitted to the second set is being scanned by the reader of the first set;

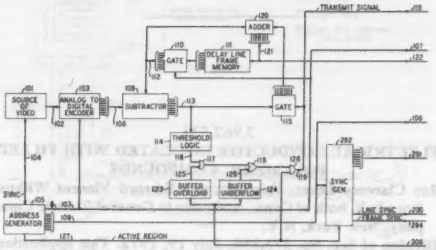
e. third means for detecting whether or not an image transmitted from the second set is being reproduced upon the recording sheet by the recorder of the first set; and

f. fourth means for resetting said facsimile reader when the output of said first means representing the hangup of the second set and the output of said second means representing that the image to be transmitted to the second set is being scanned are simultaneously derived in a transmission mode of the first set and for resetting said facsimile recorder when the output of said first means representing the hangup of the second set and the output of said third means representing that image transmitted from the second set is being reproduced are simultaneously derived in a reception mode of the first set.

3,962,535
CONDITIONAL REPLENISHMENT VIDEO ENCODER WITH SAMPLE GROUPING AND MORE EFFICIENT LINE SYNCHRONIZATION

Barin Geoffry Haskell, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 25, 1975, Ser. No. 571,531
Int. Cl.² H04N *7/12*
U.S. Cl. 178—6 **16 Claims**



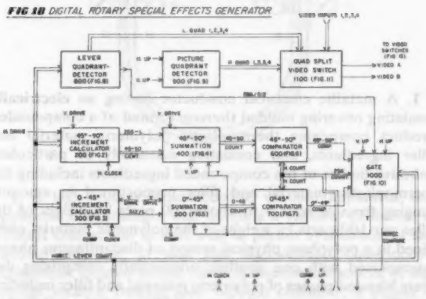
1. In a conditional replenishment video encoder wherein only selected samples are transmitted to a receiving location and each selected sample is located by a corresponding address word which represents by its value the position of the selected sample in a video line, apparatus for maintaining line synchronization comprising means for counting the number of sequential video lines wherein no samples have been selected for transmisison, means for detecting a first sample in a video line to be selected for transmission, means for coupling the address word corresponding to said selected sample to a transmission medium, and means responsive to said detecting means for coupling a bit sequence to said transmission medium in bit positions following said address word, the number of bits in said sequence being determined by a value provided at an output of said counter means.

3,962,536
DIGITAL ROTARY SPECIAL EFFECTS GENERATOR

Albert E. Busch, Bloomington, Ind., assignor to Sarkes Tarzian, Inc., Bloomington, Ind.

Filed Mar. 23, 1973, Ser. No. 344,094
Int. Cl. H04n *5/22*
U.S. Cl. 178—6.8 **37 Claims**

***FIG 1B** DIGITAL ROTARY SPECIAL EFFECTS GENERATOR*



1. A digital rotational special effects generator having at least two video inputs and at least one video output, said generator comprising:

means for generating a first number proportional to the x-coordinate of each image point in each horizontal scan;

means for generating a second number proportional to the product of the y-coordinate of each image point multiplied by a third number that represents the desired amount of effect rotation;

means for comparing said first and second numbers and for generating a signal whose state indicates which of said numbers is the larger number; and

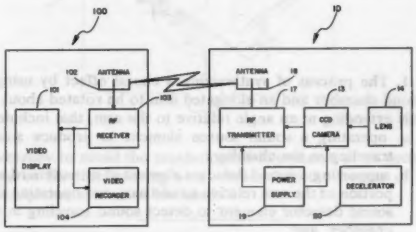
video switching means controlled by said comparing means signal for disconnecting said video output from one of said video inputs and for connecting said video output to another of said video inputs each time said comparison means signal changes its state.

3,962,537

GUN LAUNCHED RECONNAISSANCE SYSTEM

Thomas M. Kearns, Dahlgren, and Kenneth D. Ferris, Fredericksburg, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 27, 1975, Ser. No. 553,784
Int. Cl.² H04M 7/02
U.S. Cl. 178—6.8 **5 Claims**



1. A gun launched reconnaissance system for observing and continuously transmitting optical data from a target area to a remote location comprising:

a projectile housing;

a forward looking solid state charge coupled device (CCD) TV camera disposed within the nose of said housing;

a transmitter disposed within said housing and electrically connected to said CCD TV camera for continuously transmitting in real time signals therefrom to a remote location;

a power source electrically connected to said transmitter and to said CCD TV camera; and

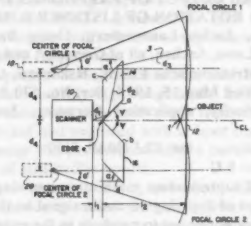
a means for decelerating said projectile over a target area to extend the period of viewing thereof.

3,962,538

FLYING SPOT SCANNING SYSTEM WITH VIRTUAL SCANNERS

Antonio B. Nafarrate, Milpitas, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 21, 1974, Ser. No. 525,695
Int. Cl.² H04N 1/04
U.S. Cl. 178—7.6 **14 Claims**



1. An optical scanning system for scanning a surface comprising:

means for providing a beam of high intensity light,

means for imaging said beam to a spot in a focal plane,

scanning means for directing said beam throughout a predetermined scan angle, and

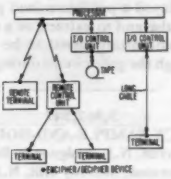
optical means between said scanning means and said surface for redirecting said beam, said optical means being comprised of at least two prisms oriented symmetrically about the center-line which bisects said predetermined scan angle, the reflective surfaces of said prisms providing at least two contiguous focal circles that define a focal plane, said redirected bean scanning said contiguous focal circles as said beam is directed through said predetermined scan angle, the centers of each focal circle being located remote from said scanning means, the scan angle of said beam as it scans each focal circle being less than said predetermined scan angle.

3,962,539

PRODUCT BLOCK CIPHER SYSTEM FOR DATA SECURITY

William Friedrich Ehrsam, Hurley; Carl H. W. Meyer, Kingston; Robert Lowell Powers, West Hurley; John Lynn Smith, and Walter Leonard Tuchman, both of Woodstock, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1975, Ser. No. 552,684
Int. Cl.² H04K 1/00; H04L 9/02
U.S. Cl. 178—22 **10 Claims**



1. A device for performing a product block cipher operation on a block of data bits under control of a set of cipher key bits comprising:

first store means storing said block of data bits,

first linear transformation means permuting said set of cipher key bits,

means connected to said first store means duplicating predetermined ones of the data bits of said block of data bits to produce ann expanded block of data bits equal in number to the number of said permuted cipher key bits,

means connected to said expansion means and said first linear transformation means carrying out a substitution transformation function in accordance with said expanded block of data bits and said permuted cipher key bits to produce a substitution set of bits equal in number to the number of bits in said block of data, and

second linear transformation means connected to said substitution transformation means permuting said substitution set of bits whereby the combined transformation results in a product block cipher of said block of data bits.

3,962,540

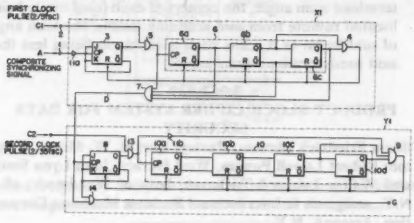
DEVICE FOR EXTRACTING A PREDETERMINED SYNCHRONIZING SIGNAL FROM A COMPOSITE SYNCHRONIZING SIGNAL

Naoyuki Kokado, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed June 12, 1974, Ser. No. 478,513
Claims priority, application Japan, June 25, 1973, 48-70741; June 25, 1973, 48-70742
Int. Cl.² H04L 7/00
U.S. Cl. 178—69.5 TV **12 Claims**

1. A synchronizing signal extracting device for extracting, from a composite synchronizing signal including a plurality of synchronizing signals whose respective constituent synchronizing pulses are different in cycle and width from each other, a synchronizing signal whose constituent synchronizing pulses have a desired cycle, said synchronizing signal extracting device comprising means including a circuit for generating, in response to each of pulses included in said composite synchro-

nizing signal, a reference pulse of predetermined width the leading edge of which is in synchronism with the leading edge of the pulse of said composite synchronizing signal, said means being operative to generate a first pulse in synchronism with the reference pulse, and a synchronizing pulse extracting means including a gate circuit to which the first pulse is supplied as an input and being operative to open the gate circuit during a time period corresponding to a time width including a point of time delayed a predetermined period from the rise of the reference pulse and to extract, as a synchronizing pulse constituting a synchronizing signal to be extracted, the first pulse passed through the gate circuit during said time period.



3,962,541

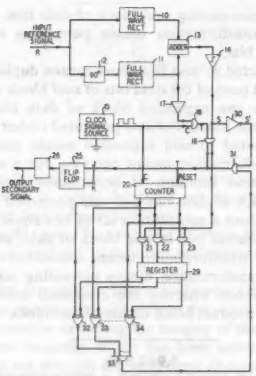
FREQUENCY SAMPLE-AND-HOLD CIRCUIT

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 13, 1975, Ser. No. 549,760

Int. Cl.² H04L *7/02*

U.S. Cl. 178—69.5 R **12 Claims**



5. A frequency sample-and-hold circuit for generating a secondary signal whose fundamental frequency is a function of the fundamental frequency of an incoming reference signal of limited time duration comprising:

a clock signal source;

means for counting and storing, during the duration of said reference signal, the number of cycles of said clock signal source occurring between zero crossings of said reference signal;

and means for producing, following the termination of said reference signal; a secondary signal whose zero crossing intervals are substantially equal to a rational multiple of the stored count multiplied by a period of time defined by said clock source.

3,962,542

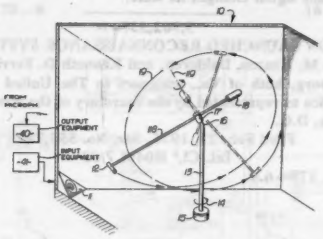
CHORALIZER APPARATUS AND METHOD

Paul S. Veneklasen, 1711 16th St., Santa Monica, Calif. 90404

Continuation of Ser. No. 44,348, June 8, 1970. This application Aug. 14, 1972, Ser. No. 280,192

Int. Cl.² H04R *3/00*

U.S. Cl. 179—1 J **18 Claims**



1. The process of synthesizing a choral effect by using a sound chamber and an elongated arm to be rotated about an axis extending at an angle relative to the arm, that includes

a. operating a sound source element to produce sound traveling in the chamber,

b. supporting a sound detector element at an outboard end portion of the arm relative to said axis, and operating said sound detector element to detect sound traveling in the chamber, and

c. effecting continuous sweeping movement of said arm and sound detector element thereon and about said axis to carry the sound detector through a sweeping path relative to said source element and relative to the chamber, while maintaining the source element in fixed position relative to the chamber so as to vary detected sound frequency and quality.

4. The process of synthesizing a choral effect by using a sound chamber in which a sound reflecting panel element is located, that includes

a. producing sound from a source element to be reflected from said panel element,

b. operating a sound detector element to detect sound traveling in the chamber,

c. effecting continuous movement of the panel element relative to said source element and relative to the chamber while keeping the source element in fixed position relative to the chamber so as to vary detected sound frequency and quality, and also effecting continuous movement of the sound detector element in the chamber.

3,962,543

METHOD AND ARRANGEMENT FOR CONTROLLING ACOUSTICAL OUTPUT OF EARPHONES IN RESPONSE TO ROTATION OF LISTENER'S HEAD

Jens Blauert, Aachen-Laurensberg; Georg Boerger, Berlin, and Peter Laws, Aachen, all of Germany, assignors to Eugen Beyer Elektrotechnische Fabrik, Heilbronn, Germany

Filed May 15, 1974, Ser. No. 470,015

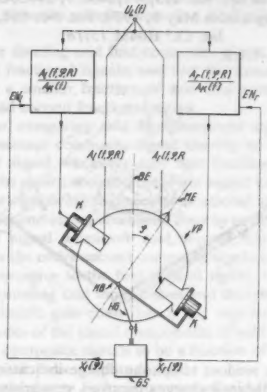
Claims priority, application Germany, June 22, 1973, 2331619

Int. Cl.² H04R *5/00*

U.S. Cl. 179—1 G **21 Claims**

1. A sound reproduction method, comprising, in combination, the steps of applying an audio signal to the audio-signal input of a headphone set to produce in the ears of the wearer of the headphone set corresponding audible sound waves; continually detecting changes in the orientation of the head of the wearer of the headphone set; and in dependence upon the detected changes in the orientation of the head of the wearer modifying said audio signal to effect changes in the audible sound waves produced in the ears of the wearer simulating the

changes which would occur if the wearer of the headphone set were actually listening to an external stationary sound source,



whereby to avoid the psychological impression of an orchestra, or the like, moving as a whole when the wearer of the headphone set moves his head.

3,962,544

SOUND REPRODUCING DEVICES

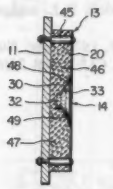
Fumio Kobayashi, Hino, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1974, Ser. No. 536,563

Claims priority, application Japan, Dec. 28, 1973, 48-2741; Dec. 28, 1973, 48-2742

Int. Cl.² H04R 1/28

U.S. Cl. 179—1 E **12 Claims**



1. A sound reproducing device comprising:

a speaker enclosure with a buffer board disposed in front thereof for mounting a speaker device thereon,

a first speaker device enclosed in said enclosure and mounted on said buffer board to reproduce relatively low range audio frequencies,

a second speaker device mounted on said buffer board to reproduce relatively high range audio frequencies,

a diffuser assembly mounted on a front surface of said buffer board and provided with at least one sound radiation passage therein substantially in parallel with a front surface of said buffer board,

said diffuser assembly being provided with said second speaker device mounted thereon in front thereof, and

said second speaker device comprising a speaker cone, a front surface of which is disposed in front of said speaker enclosure to radiate the sounds reproduced there forward, and a rear surface of which communicates with said sound radiation passage in said diffuser assembly to radiate the sounds reproduced there substantially in parallel with the front surface of the buffer board.

3,962,545

UTILITY METER READING SYSTEM USING TELEPHONE LINE

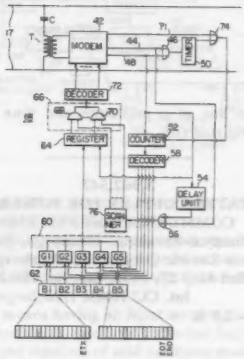
Takeshi Abe, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed July 25, 1974, Ser. No. 491,882

Claims priority, application Japan, Oct. 20, 1973, 48-118342; Dec. 30, 1973, 49-1017

Int. Cl.² H04M 11/00

U.S. Cl. 179—2 AM **12 Claims**



1. A system for reading utility meters, comprising:

remote terminal means connected to the meters and operative to store the meter readings therein;

central terminal means communicating with the remote terminal means by a telephone line;

the central terminal means being operative to transmit an interrogation signal to the remote terminal means;

the remote terminal means being further operative to transmit the meter readings to the central terminal means in response to the interrogation signal;

the remote terminal means comprising a plurality of remote terminals, each remote terminal being connected to a different plurality of meters, the frequency of the interrogation signal being different for each remote terminal; and

each remote terminal being in a normal status prior to receipt of the interrogation signal and being operative to reset itself to the normal status at a predetermined time after receipt of the interrogation signal at it own frequency and in response to the interrogation signal at a frequency for another remote terminal.

3,962,546

MALFUNCTION DETECTION AND CHANGEOVER APPARATUS FOR DATA COMMUNICATIONS SYSTEM

Takemi Hashimoto, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1974, Ser. No. 518,825

Claims priority, application Japan, Dec. 13, 1973, 48-140740

Int. Cl.² H04M 11/04

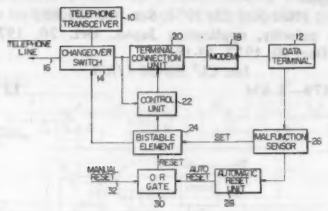
U.S. Cl. 179—2 DP **3 Claims**

1. In a method of data transmission in which a data terminal is normally connected to a telephone line, the improvement comprising the steps of:

a. sensing for the presence of a malfunction of the data terminal;

b. disconnecting the data terminal from the telephone line and connecting a telephone set to the telephone line when a malfunction is sensed; and

c. automatically disconnecting the telephone set from the telephone line and re-connecting the data terminal to the



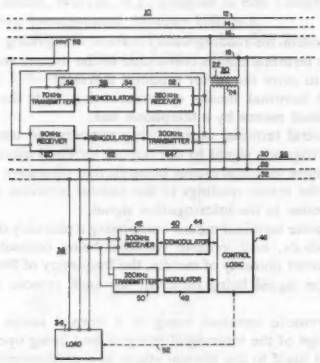
telephone line at a predetermined time interval after performing step (b).

3,962,547

REPEATER COUPLER FOR POWER LINE COMMUNICATION SYSTEMS

Tamas I. Pattantyus-Abraham, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 27, 1975, Ser. No. 580,861
Int. Cl.² H04H 1/08
U.S. Cl. 179—2.5 R **8 Claims**



8. Apparatus for connecting separate transmitters of a power line communication system to the same secondary distribution line, comprising:

a first transmitter having an output terminal which is maintained at a virtual ground potential when the first transmitter is not transmitting;

a second transmitter having a lower output power than said first transmitter;

an interconnecting transformer having first and second windings with the number of turns on the first winding being greater than the number of turns on the second winding, said first winding being connected to output terminals of the second transmitter;

a coupling transformer having primary and secondary windings, with said secondary winding being coupled to the secondary distribution line and with said primary winding connected between ground potential and one end of the second winding of the interconnecting transformer, the other end of said second winding being connected to the output terminal of the first transmitter; and

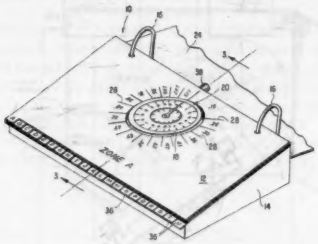
means for limiting the voltage which may develop across the second winding of the interconnecting transformer.

3,962,548

DIRECT READOUT EXHIBITOR FOR DETERMINING LONG DISTANCE TELEPHONE CHARGES

Wayne B. Stone, Jr., 7307 Nevis Road, Bethesda, Md. 20034

Continuation of Ser. No. 413,571, Nov. 7, 1973, abandoned.
This application May 8, 1974, Ser. No. 468,202
Int. Cl.² H04M 15/18
U.S. Cl. 179—7.1 R **5 Claims**



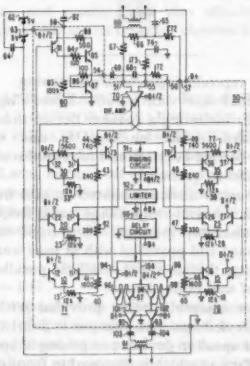
1. A direct readout telephone charge indicator for determining long distance charges incurred, comprising; a timing device having a visual time indicating indicial array and start, stop and reset means; a multiplicity of changeable exhibitor means each having geometrically congruent charge indicating indicial arrays geometrically similar to said time indicating indicial array and representative of long distance charge zones; and means mounting said changeable exhibitor means for selective movement into and out of juxtaposition to said timing device whereby the charge on a selected exhibitor means may be directly read by corresponding reference to the geometrically similar arrays on the timing device and selected exhibitor means.

3,962,549

THRESHOLD DETECTOR CIRCUITRY, AS FOR PCM REPEATERS

Borys Zuk, New Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 29, 1975, Ser. No. 545,156
Int. Cl.² H04B 3/36
U.S. Cl. 179—16 EA **14 Claims**



10. A repeater comprising, in combination:

means receptive of input pulses received by said repeater for providing first and second composite signals, each

composite signal comprising a signal component of amplitude v superimposed upon a direct component of amplitude V, v always being smaller than V and being responsive to the amplitude of said input pulses, the signal component of second composite signal being concurrent with and of opposite polarity from that of the first composite signal;

means for dividing said first composite signal into first and second fractional signals, said first fractional signal comprising a smaller fraction of said first composite signal than said second fractional signal;

means for comparing said first fractional signal with the entire second composite signal thereby to derive a first control signal whenever said first fractional signal exceeds the entire second composite signal in amplitude;

means for comparing said second fractional signal with the entire second composite signal thereby to derive a second control signal whenever said second fractional signal exceeds the entire second composite signal in amplitude;

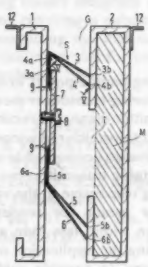
means responsive to the first control signal, when present, for attenuating said input pulses and thereby completing an automatic-gain-control loop for regulating the peak amplitudes of the signal components of said first and said second composite signals to be a fraction of V defined as 100% peak pulse amplitude; and

means responsive to each occurrence of said second control signal for generation of an output pulse.

3,962,550
JOINT SEALS FOR ELECTROMAGNETIC WAVE SHIELDS

Hans-Peter Kaiserswerth, Regensburg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 12, 1973, Ser. No. 378,716
Claims priority, application Germany, July 18, 1972, 2235216
Int. Cl.² H05K 9/00
U.S. Cl. 174—35 GC 8 Claims



1. In a construction for shielding against electromagnetic wave conduction,

a. a pair of adjacent relatively movable electrically conductive shield members having a space therebetween, and

b. a seal limiting leakage of radio-frequency signals through said space, said seal comprising:

1. two conductive elongated spaced contact spring assemblies having a V-shaped cross-section, one leg of each of said assemblies having a base portion disposed in electrical engagement with one of said members, and the other leg of the assemblies being a freely deflectable spring portion having an edge biased against the other of said members and in electrical engagement therewith;

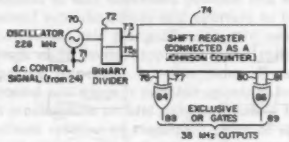
2. at least one clamp secured to said one member between said spring assemblies and holding the base portions against said one member; and

3. electrical insulation disposed between the engaging points on said clamp and said base portions and insulating said clamp from said assemblies.

3,962,551
METHODS AND SYSTEMS FOR PROVIDING STEREO DECODING SIGNALS

Michael J. Gay, Geneva, Switzerland, assignor to Motorola, Inc., Chicago, Ill.

Filed Mar. 28, 1974, Ser. No. 455,840
Int. Cl.² H04H 5/00
U.S. Cl. 179—15 BT 7 Claims



1. A signal generator system for providing stereo decoding signals, including in combination:

oscillator means for providing an output signal at an output terminal thereof which has a repetition rate that is a first predetermined multiple of the repetition rate of a stereo decoding signal;

shift register means having an input terminal and a plurality of output terminals, said input terminal being connected to said output terminal of said oscillator means, said shift register means dividing said repetition rate of said oscillator output signal by a second predetermined multiple to provide output signals at said output terminals thereof, said output signals having a predetermined phase relation with respect to each other;

first circuit means responsive to selected ones of said output signals from said shift register means for providing at respective output terminals a first output signal having a repetition rate of said stereo decodjng signal and a second output signal having a repetition rate of said stereo decoding signal, said second output signal having a predetermined phase relationship to said first output signal; and

second circuit means for combining said first and second output signals from said first circuit means so that a stereo decoding signal is produced which has substantially no third harmonic components.

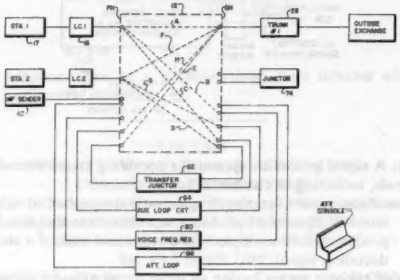
3,962,552
SWITCHING NETWORK AND PERIPHERAL CIRCUITS FOR TELECOMMUNICATIONS SYSTEM

Jose Reines, Glen Ellyn; Eric G. Platt, Darien; Stanley Earl White, Hoffman Estates, and Marion Casimir Byckowski, Prospect Heights, all of Ill., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 283,633, Aug. 25, 1972, abandoned. This application Dec. 12, 1973, Ser. No. 426,612
Int. Cl.² H04Q 3/54
U.S. Cl. 179—18 EA 12 Claims

1. A telecommunications system including a central program controller, an electronic switching network comprising a plurality of cascaded stages between its line end and its supervisory end, said network being of the end-marked type, a plurality of line circuits coupled to respective terminals on said line end and a plurality of junctors and trunks coupled to respective terminals on said supervisory end, said line circuits, trunks and junctors responsive to signals from said controller for marking respective terminals representative of a selected line end circuit and a selected supervisory end circuit, a predetermined number of available paths through said network from a selected terminal on one end of said network to a selected terminal at the other end of said network, said network responsive to marking of a terminal at one of its ends and

a terminal at the other of its ends to attempt completion of a path through the network over a random one of said paths in self-seeking fashion, and including a plurality of circuits peripheral to said network, each of said peripheral circuits being connected to a terminal at said line end and a terminal at said supervisory end for providing access to both ends of said network for providing a second plurality of available paths through a peripheral circuit between a peripheral circuit terminal at either end of said network and a terminal at the other end of said network responsive to failure of attempts at completion of a path from one end of said network to the other end thereof responsive to said mentioned marking of the network ends.



6. A telecommunications system employing an electronic switching network controlled by a stored program data processor for providing interconnection between stations of said system, and including a line circuit coupled to each station, means at certain of said stations for generating dial pulses in the form of interruptions of the station line loop, a first path from each line circuit to said network for the completion of a talking path through said network, means in each line circuit for continuously sensing the condition of the line loop at its coupled station, and a second path for forwarding signals representing said sensed condition to said processor for storage of said signals and for the return of control signals from said processor independently of the connection of the line circuit to the network, said sensed condition signals including interrupted dial pulses received from stations coupled to the line circuit.

3,962,553
PORTABLE TELEPHONE SYSTEM HAVING A BATTERY SAVER FEATURE

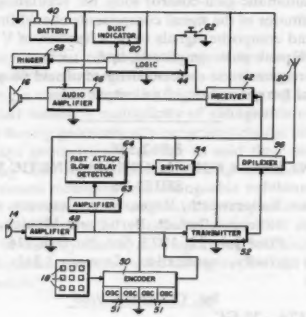
Donald L. Linder, Elmhurst; Orville M. Eness, Park Ridge, and Charles N. Lynk, Jr., Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 346,203, March 29, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,827
Int. Cl.² H04M *5/08*
U.S. Cl. 179—41 A **9 Claims**

1. A full duplex radio communication system including in combination:

a base station having base frequency modulated transmitter means for providing radio signals having a first carrier frequency and base frequency modulated receiver means including frequency modulation detector means for simultaneously receiving radio signals having a second carrier frequency different than said first carrier frequency, said base receiver means having an audio output circuit and noise operated squelch circuit means for muting said audio output circuit, said squelch circuit means being connected to the frequency modulation detector means of said base receiver means and responsive to radio frequency signals received by said base receiver for rendering said audio output circuit operative upon receipt of radio signals by said base receiver and for muting said output circuit upon termination of said received radio frequency signals, said squelch circuit having a response time of less than approximately 10 milliseconds for rendering said audio output circuit operative in substantial synchronism with the receipt of said second carrier frequency radio signals, and for rapidly muting said audio output circuit upon termination of said received radio signals to render noise bursts provided by said base receiver means in the absence of received signals substantially inaudible; and

a personal portable unit adopted to be carried by an individual and having portable transmitter means for providing radio frequency signals having said second carrier frequency and portable receiver means for simultaneously receiving radio signals having said first carrier frequency, said portable unit including a battery sufficiently small to be carried easily by the individual operating said portable unit for providing limited power to said portable unit, said portable unit having transducer means connected to said portable transmitter means for receiving voice signals and modulating said transmitter in accordance therewith, and voice detector means connected to said transducer means and to said portable transmitter means, said voice detector means being responsive to the voice signals applied to said transducer means for rendering said transmitter means operative within less than approximately 5 milliseconds following the application of voice signals to said transducer means to provide said second carrier frequency radio signals when voice signals are applied to said transducer means and for maintaining said portable transmitter means operative for more than approximately one-half second following the termination of said voice signals, said transmitter means being rendered inoperative with no signals applied to said voice detector.



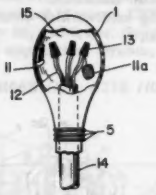
3,962,554
ELECTRICAL INSULATION PROTECTOR MEANS

James Anthony Eigel, Claremont, N.C., assignor to Superior Continental Corporation, Hickory, N.C.

Filed Apr. 2, 1975, Ser. No. 564,496
Int. Cl.² H02G *15/02*
U.S. Cl. 174—74 A **4 Claims**

1. First and second bags, said second bag being perforated, containing an antioxidant and disposed on the interior of the first bag, at least one plastic insulated electrical conductor protruding into the interior of the first bag and at least a

portion of the sidewalls of the first bag being gathered about the periphery of the insulated electrical conductor to form an



enclosed space about that portion of the insulated electrical conductor protruding into the first bag.

3,962,555

TELEPHONE HANDSET GUARD

Dale E. Efaw, 21486 Lorain Road, Fairview Park, Ohio 44126

Filed Mar. 6, 1975, Ser. No. 556,091
Int. Cl.² H04M *1/17*
U.S. Cl. 179—185 **5 Claims**

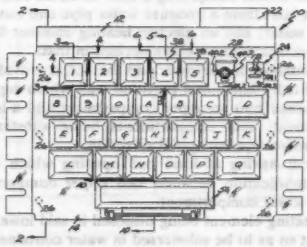
1. An apparatus for covering at least a portion of a handset of a telephone having a receiver, a transmitter, a handle and a dial mechanism intermediate the receiver and transmitter, comprising first cap means for covering the receiver of the handset, second cap means for covering the transmitter of the handset, filter means for each of said first and second cap means, and connecting means integrally connecting the first and second cap means covering a substantial portion of the handset specifically excluding the dial mechanism, and said connecting means including a slot for entry of an electrical connection to said handset.

3,962,556

KEYBOARD WITH VERSATILE SWITCH SUPPORT STRUCTURES

Robert T. Kravchuck, Lincoln, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 10, 1975, Ser. No. 535,529
Int. Cl.² B41J *5/08*; H01H *3/00, 13/62*; G06C *7/02*
U.S. Cl. 200—5 R **25 Claims**



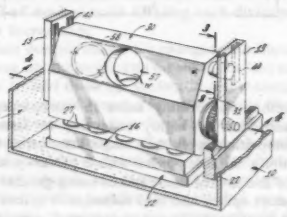
1. A keyboard comprising a substrate of insulating material having a plurality of pairs of electrical contact means disposed in a selected pattern on said substrate and having circuit path means connected to said contact means, a support member secured to said substrate extending in generally parallel relation to the substrate in a plane spaced a selected distance from the substrate, said support member having a plurality of openings therein and being secured to said substrate with said openings aligned with respective pairs of said contact means on said substrate, and a plurality of switch mechanisms disposed in respective support member openings, each of said switch mechanisms having a housing which is open at one end and which has an aperture opposite said open end, having a contact element which is movable in said housing to a depressed position at said open housing end and which is biased to a retracted position within said housing, and having a plunger means which is movable in said housing to move said contact element to said depressed position and which has a portion thereof extending from said aperture to be manually engaged for moving said plunger means, said switch mechanism housings each having stop means and resilient detent means engaging respective opposite sides of said support member around said support member openings for mounting said switch mechanisms on said support member in predetermined positions relative to respective pairs of said contact means on said substrate for permitting said contact element to bridge one pair of said contact means on said substrate when said contact element is disposed in said depressed position and for disposing said contact element spaced from at least one of that pair of contact means when the contact element is in said retracted position.

3,962,557

WASTE METAL REMOVAL IN E.D.M. MACHINING

Homer G. Buck, 1000 SE. Bay Blvd. No. 14F, Newport, Oreg. 97365

Filed Jan. 30, 1975, Ser. No. 545,696
Int. Cl.² B23P *1/12*
U.S. Cl. 219—69 D **16 Claims**



5. In an electrical discharge machining apparatus for cylindrical workpieces, the combination comprising:

means to support the workpiece for rotation within tthe dielectric liquid tank of the apparatus;

means to rotate the workpiece during electrical discharge machining thereof along longitudinal traces of the workpiece sequentially brought into machining zone registration with the electrode of the apparatus;

a housing for the workpiece formed with a cavity within which the workpiece is rotatable, said housing being formed with a fluid inlet opening surrounding the zone of machining registration of the workpiece and the electrode, said cavity defining a fluid passage relative to the portion of the workpiece enclosed by said housing and in fluid communication with an outlet port for the fluid;

and means for effecting flow of the liquid into said inlet opening and through said housing for exhausting via said outlet port to a location external of the tank of said apparatus for flushing waste metal particles out of the machining zone of registration of the workpiece and the electrode without dispersion of the particles into the liquid contained in the tank.

14. A process of removing waste particles from the machining zone between an electrode element and a workpiece ele-

ment disposed in a tank containing a dielectric liquid, one of the elements comprising a revolving body of revolution, comprising:

defining a barrier to isolate one of the elements from flow therearound by the surrounding liquid in the tank otherwise than by flow through an aperture closely surrounding the machining zone;

and flowing the liquid from the tank through the machining zone and aperture for circulation past the isolated element to a location external of the tank, whereby waste particles are entrained in the removed liquid for transfer from the machining zone to the external location.

3,962,558

METHOD AND APPARATUS FOR DRILLING WATCH JEWELS OR OTHER WORKPIECES BY MEANS OF LASER BEAMS

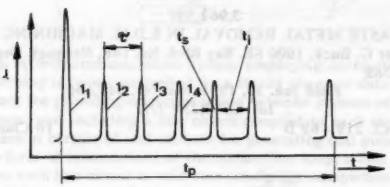
Ernst Kocher, Bayweg 11, 3123 Belp; Jürg Steffen, Bernstrasse 49, 3122 Kehrsatz, and Gerd Bernd Herziger, Wiesenstrasse 4, 3073 Gumligen, all of Switzerland

Continuation of Ser. No. 238,777, March 28, 1972, abandoned. This application Mar. 18, 1974, Ser. No. 452,379

Claims priority, application Switzerland, Mar. 29, 1971, 4550/71

Int. Cl.² B23K *27/00*

U.S. Cl. 219—121 LM **4 Claims**



1. A method for drilling holes in workpieces which are highly transparent or highly reflective to laser light, said method comprising applying a single laser pulse to the workpiece, forming the laser pulse with a plurality of spikes, the intensity of the first of these spikes being greater than that of all subsequent spikes and said subsequent spikes follow each other with a substantially constant period, providing the first spike with an intensity sufficient to vaporize a surface layer of the material of the workpiece, providing the subsequent spikes with sufficient energy such that each vaporizes a layer of material having a thickness of approximately 20 μm so as to form a hole in the workpiece, and maintaining the period between said subsequent spikes sufficiently large such that the vaporized material produced by a previous spike has escaped from the hole being formed before the next spike arrives at the workpiece, said spikes having an energy of approximately 1 m Joule, the duration of the spikes being approximately 0.5 μsec, the period between the spikes being approximately 3 μsec and the peak intensity being less than 10^9 W/cm2.

3,962,559

TEMPERATURE CONTROL CIRCUIT AND OVEN

Benedict J. Drda, Medina, Ohio, and Maxwell Meredith, Chelmsford, Mass., assignors to LFE Corporation, Waltham, Mass.

Filed Jan. 3, 1975, Ser. No. 538,401

Int. Cl.² H05B *1/00*

U.S. Cl. 219—210 **11 Claims**

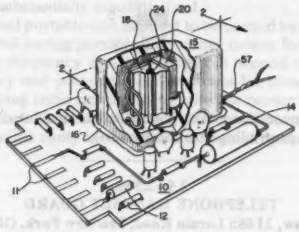
1. A temperature control circuit comprising:

a transistor having a base electrode, an emitter electrode, and a collector electrode,

first and second supply terminals for connection to a source of electrical power,

a load resistor connected between said first supply terminal and said collector electrode,

means connecting said emitter electrode to said second supply terminal,



a zener diode and a positive temperature coefficient thermistor connected in series between said first supply terminal and said base electrode, and

a second resistor connected between said base electrode and said second supply terminal.

3,962,560

WATER HEATER

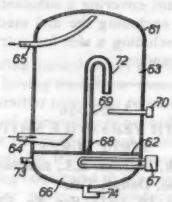
Chris Reidar Braathen, Melkeveien 55, Oslo 3, Norway

Filed Sept. 4, 1974, Ser. No. 503,063

Claims priority, application Norway, Jan. 4, 1974, 32/74

Int. Cl.² F24H *1/20*

U.S. Cl. 219—314 **8 Claims**



1. Water heater comprising a heat-insulated container having direct inlet from a pressure water pipe and outlet for hot pressure water, and an electric heating element for heating water in said container, characterized in that:

said container, in the lower part thereof, is provided with an essentially horizontal partition wall which separates the container into an upper compartment and a lower compartment, said compartments being substantially coextensive in a horizontal direction;

said wall having at least one opening which establishes communication between said upper compartment and said lower compartment;

said heating element being disposed in said lower compartment so as to be submersed in water contained therein;

said inlet and said outlet both being formed in said upper compartment, such that water in said upper compartment constitutes consumption water and water in said lower compartment constitutes storage water surrounding said heating element.

3,962,561
CATALYTICALLY ASSISTED PYROLYTIC SELF-CLEANING OVEN

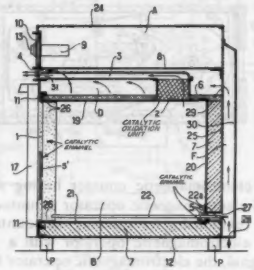
Paul Maitenaz, Orleans, France, assignor to Compagnie Europeenne pour l'Equipement Menager, CEPEM, Paris, France

Filed July 16, 1974, Ser. No. 489,022

Claims priority, application France, July 17, 1973, 73.26140

Int. Cl.² H05B *1/00*; A21B *1/00*, *1/22*

U.S. Cl. 219—391 **3 Claims**



1. In a cooking oven which is self-cleaned by pyrolysis, and which includes front, rear, top, bottom and opposed side walls forming the oven muffle, and wherein said oven further includes means for thermally insulating said oven muffle walls, means for heating said oven muffle to a temperature of about 400° to 500° C to clean the oven walls by pyrolysis, and wherein the front wall includes an oven access opening therein and supports a pivotable door having a thermally insulated inner wall which overlies the opening to close off the same such that cold air leaking around the edge of the door forms reduced temperature areas on the inside face of the door and the oven wall surrounding the door, the improvement wherein said inside face of said oven door is lined with catalytic enamel and a strip of catalytic enamel lines the walls of the oven at a narrow zone immediately surrounding the access opening so as to substantially reduce the heating time for the self cleaning of the oven walls; the catalytic enamel being capable of withstanding the pyrolytic cleaning temperature.

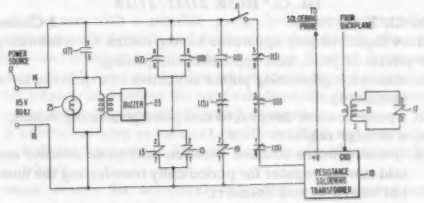
3,962,562
RESISTANCE SOLDER UNIT CONTROL

William F. Carter, Philadelphia, and John H. Drinkard, Jr., Exton, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 14, 1974, Ser. No. 432,831

Int. Cl.² H05B *1/02*

U.S. Cl. 219—490 **8 Claims**



1. A control circuit for controlling soldering probe temperatures in a resistance soldering unit, having an AC to DC power converter supplying direct current to a resistance soldering probe circuit, said circuit including a ground return line to said power converter, comprising:

means connected to the AC supply to said power converter for interrupting the alternating current to a transformer contained therein for limiting temperature rise in said soldering probe; and

means associated with said interrupting and limiting means for permitting reestablishment of current to said power converter for establishing a lower soldering temperature in said probe.

3,962,563
DEVICE FOR THE INCREMENTAL SCANNING OF A LINE SCALE

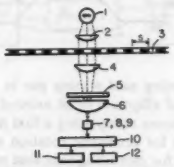
Hans-Dieter Schulz-Methke, Breitscheid, Germany, assignor to Espera-Werke GmbH, Duisburg, Germany

Filed Sept. 9, 1974, Ser. No. 504,075

Claims priority, application Germany, Sept. 13, 1973, 2346091

Int. Cl.² H03K *21/34*

U.S. Cl. 235—92 V **12 Claims**



1. A device for incremental scanning of a line scale divided into divisional intervals comprising:

three photoelectric cell means disposed at three different fixed points within a distance equivalent to one divisional interval of the line scale dividing each divisional interval into six increments;

illumination control means for changing the illumination of said three photoelectric cell means as the line scale moves relative to said three photoelectric cell means;

discriminator circuit means connected to said three photoelectric cell means for transforming into electric impulses the changes in resistance of said three photoelectric cell means caused by the change in the illumination of said three photoelectric cell means and having two outputs on which the electric impulses are provided; and,

counter means connected to the outputs of said discriminator circuit means for forward and backward counting of the number of electric impulses as a function of the direction of line scale movement comprising two counters, one of which counts all impulses, the other of which counts only impulses preceded by an impulse on the opposite output.

3,962,564
APPARATUS FOR COUNTING A STACK OF SHEETS

Gordon Stanley Dutton, Harwich, England, assignor to Vacumatic Limited, England

Filed Sept. 19, 1974, Ser. No. 507,549

Int. Cl.² G06M *9/00*

U.S. Cl. 235—92 SB **5 Claims**

1. Apparatus for counting a stack of sheets, comprising in combination:

a. a counting head which is adapted to be traversed along a corner of a stack of sheets;

b. a suction blade having a suction orifice for insertion into the corner of such stack;

c. a wiping pin;

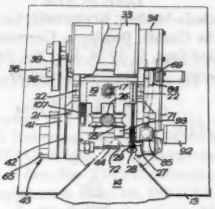
d. means mounting said suction blade and said pin on said head for movement therewith along the corner of the stack;

e. means to oscillate said blade about a corner of a sheet in the stack adhered by suction to one side of the blade from the next sheet;

f. means to move said pin in an elongate orbit around said blade to transfer the said corner of the sheet from the said one side of the blade to the opposite side thereof;

g. means to count the number of transfer operations effected;

h. means to traverse the counting head downwardly past a corner of a stack to be counted; and,



i. means for moving said wiping pin in a generally downwardly inclined elliptical orbit around the suction blade, said moving means comprising a first means for mounting the wiping pin for eccentric rotation about a first axis, a second means for mounting said first mounting means for eccentric rotation about a second axis, means to drive said second mounting means about the second axis, and means to drive the first mounting means about said first axis comprising a pinion fixed to the first mounting means in mesh with an internally toothed gear so that as the first mounting means is rotated with the second mounting means the pinion orbits said internally toothed gear so as to rotate the first mounting means.

3,962,565

APPARATUS FOR PRESETTING A COUNTER TO A GIVEN INITIAL COUNT

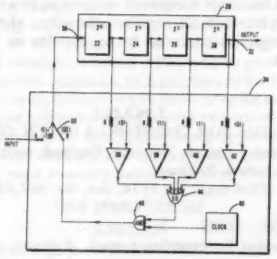
Bao-Dam N. Guyen-Phuoc, Orsay, France, assignor to Schlumberger Instruments et Systemes, Paris, France

Filed May 6, 1974, Ser. No. 467,027

Claims priority, application France, May 8, 1973, 73.16453

Int. Cl.² H03K 21/18, 21/36

U.S. Cl. 235—92 PE **8 Claims**



1. Apparatus for automatically presetting an electric pulse counter to a given initial count, comprising first means, triggered by a preset signal, for applying pulses to the input of the counter, and second means, triggered by the overflow pulse appearing at the output of the counter when it resets to cause the application to its input of a number of pulses equal to said initial count.

3,962,566

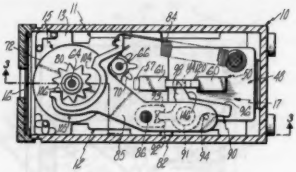
ELECTROMAGNETIC COUNTER

Edward F. Gebelein, Jr., Harwinton, and John G. Gamble, Simsbury, both of Conn., assignors to Veeder Industries, Inc., Hartford, Conn.

Filed July 30, 1974, Ser. No. 493,252

Int. Cl.² G06M 1/10

U.S. Cl. 235—92 C **10 Claims**



1. In an electromagnetic counter having a frame and a counter and electromagnetic operator mounted on the frame in operative relationship for indexing the counter by energization of the electromagnetic operator with a predetermined electrical signal, the electromagnetic operator having an electromagnet with a generally U-shaped ferromagnetic core with a pair of spaced legs with opposed spaced poles and an energizing winding encircling at least one of the legs for selectively magnetizing the core, a ferromagnetic armature member reciprocably mounted adjacent to the pair of spaced poles at the core for being magnetically attracted in one direction by the core from a withdrawn position to an extended position upon energization of the winding with said predetermined electrical signal, and return means for returning the armature member in the opposite direction to its withdrawn position upon de-energization of the winding; the improvement wherein the electromagnetic counter comprises a ferromagnetic control member having a saturable shunt extending between the poles of the core so that the shunt is saturated with substantially less current than the current of said predetermined signal whereby a noise signal of substantially less duration than the predetermined electrical signal is ineffective to index the counter, the saturable shunt comprising a pole segment adjacent one of the poles of the core and the ferromagnetic control member having a portion extending between the poles and adjacent said pole segment to reduce the incipient air gap between said one pole and the ferromagnetic armature member.

3,962,567

DIGITAL DISPLAY APPARATUS HAVING JITTER CORRECTION

Jeffrey A. Oicles, Glendale, Ariz., and Thomas F. Martin, Euclid, Ohio, assignors to TRW Inc., Redondo Beach, Calif.

Filed Jan. 13, 1975, Ser. No. 540,356

Int. Cl.² H03K 21/32, 21/18

U.S. Cl. 235—92 EA **2 Claims**

1. A digital display apparatus having means for minimizing the effects of jitter, said apparatus comprising:

a. means for generating pulses indicative of a quantity to be measured;

b. a pulse counter coupled to said pulse generating means;

c. a storage register;

d. transfer means coupled between said pulse counter and said storage register for periodically transferring the number stored in said counter;

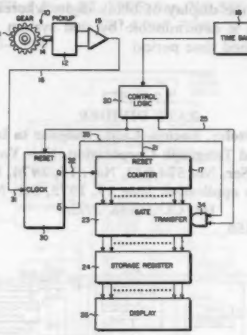
e. a time base;

f. logic means controlled by said time base and coupled to said counter and to said transfer means for periodically transferring the number in said counter by said transfer means to said storage register and for periodically resetting said counter after the occurrence of a predetermined period of time;

g. a first flip flop precounter coupled between said pulse generating means and said counter;

h. an AND gate coupled between said flip flop, said logic means and said transfer means, whereby said transfer means is only rendered operative by said AND gate when said flip flop is in a predetermined one of two possible states; and

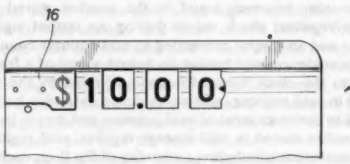
i. digital display means coupled to said storage register for displaying a number representative of the number of pulses occurring in said predetermined period.



3,962,568
RANGE EXTENDING ATTACHMENT FOR USE IN A PRICE DISPLAY MECHANISM

Francis M. Lathrop, II, 10306 Neuens, Houston, Tex. 77043

Filed Apr. 10, 1975, Ser. No. 566,927
Int. Cl.² B67D 5/22; G07G 1/02
U.S. Cl. 235—132 R 10 Claims



1. For use with a gasoline pump having a price totalizer which a specified number of decimal number wheels, the most significant number wheel having numbers thereon from zero to nine, and a reset mechanism which resets the price totalizer after totaling and before the next sale from the gasoline pump, a range extending apparatus which comprises:

a number serving as the next significant digit and located to indicate its position beyond the most significant number wheel;

mask means for selectively covering and exposing said number;

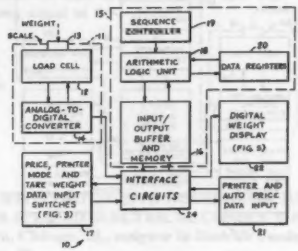
means for detecting movement of the most significant number wheel past the largest number displayed thereon, said means further moving said mask means to expose said number; and,

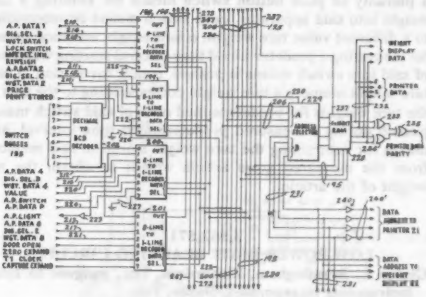
reset means for restoring said mask means to a position covering said number on operation of the reset mechanism of the totalizer.

3,962,569
VALUE COMPUTING SCALE

Richard C. Loshbough, Temperance, Mich.; Edward G. Pryor, and Gerald D. Robaszkiewicz, both of Toledo, Ohio, assignors to Reliance Electric Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 434,401, Jan. 18, 1974, abandoned. This application Apr. 30, 1975, Ser. No. 573,147
Int. Cl.² G01G 19/413
U.S. Cl. 235—151.33 8 Claims





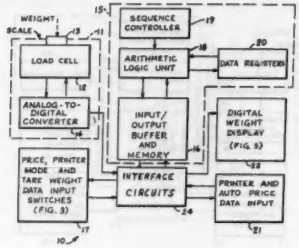
1. A computing and printing weighing scale comprising, in combination, an integrated circuit computer which includes an arithmetic logic unit, a sequence controller and data registers, load cell weighing scale means, data input means, interface means for receiving weight data from said scale means and price data from said data input means and functioning to multiplex such data to said computer, the weight and price data being related to each of a plurality of successive weighed articles, printer means for printing the weight and price data and the value computed from such data, said sequence controller causing said arithmetic logic unit and said data registers in said computer to compute the value of the weighed articles and controlling the supplying of such values and the weight and price data through said interface means to said printer means, and digital weight display means operatively connected to said interface means.

3. A computing printing weighing scale comprising, in combination, an integrated circuit microcomputer, load cell means for supplying weight data, data input means including four data input buses for supplying price data, said microcomputer computing the value of successive weighed articles from such weight and price data, such data being supplied to said microcomputer on the four data input buses, and interface means for multiplexing such data onto said four data input buses and including four decoders, each having a single output connected to a different one of said data input buses.

3,962,570
SCALE WITH MANUAL TARE ENTRY

Richard C. Loshbough, Temperance, Mich., and Edward G. Pryor, Toledo, Ohio, assignors to Reliance Electric Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 434,663, Jan. 18, 1974. This application Apr. 30, 1975, Ser. No. 573,150
Int. Cl.² G06F *15/46*
U.S. Cl. 235—151.33 **4 Claims**

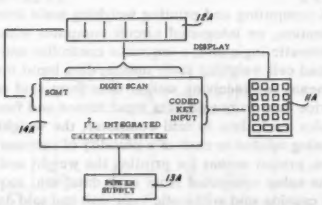


1. Net weight measuring apparatus comprising, in combination, scale means for measuring the gross weight of an article, a plurality of push button switch means for entering a tare weight into said apparatus, each switch means corresponding to a different value tare weight, a tare weight memory, means for measuring a predetermined time interval starting when one of said tare switch means is pushed, means for storing in said tare weight memory a tare weight corresponding to the sum of the tare weights for predetermined ones of said switch means pushed during a measured predetermined time interval, and means for subtracting the tare weight stored in said memory from the measured gross article weight to obtain the net weight of the article.

3,962,571
LOW POWER DIGIT BLANKING CIRCUIT

George L. Brantingham, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 26, 1974, Ser. No. 527,507
Int. Cl.² G06F *3/14*
U.S. Cl. 235—152 **10 Claims**



1. In an electronic calculator system having data storage means, an arithmetic unit for performing operations on data, control means for providing commands which define the operation of the system and output means having first and second sets of output terminal means, an automatic leading zero digit blanking circuit comprising:

a. first means coupled to said first set of terminal means for providing output data to said first set of terminal means;

b. second means coupled to said second set of terminal means for selectively enabling said second set of terminal means;

c. a set of input terminal means for the application of input data from a keyboard generated in accordance with the selective activation of keys of said keyboard simultaneously with the selective enabling provided by said second set of terminal means;

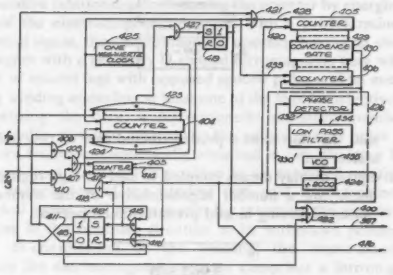
d. means coupled to said first means and responsive to said output data for detecting leading zero data and for selectively turning off said second means for leading zero digits to be displayed as blank; and

e. means for turning off said first means and delaying the turning off of said second means for a predetermined time period for the display of blank digits wherein said keyboard data is determinable by said system during said predetermined time period.

3,962,572
RATE DIVIDER

Albert Donald Stolzy, Encino, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 524,043, Nov. 15, 1974, Pat. No. 3,918,292. This application June 19, 1975, Ser. No. 588,641
Int. Cl.² H03K *21/36*
U.S. Cl. 235—156 **1 Claim**



1. A rate divider comprising: a storage register having a plurality of stages; a counter having a plurality of stages and having count and reset inputs; a coincidence gate having an output and having plural inputs connected from the stages of both said storage register and said counter for producing an output pulse at said output thereof when the number stored in said counter becomes equal to the number stored in said storage register; clock means having an output signal frequency and an output connected to said counter count input, said coincidence gate having an output signal of a frequency equal to the clock means frequency divided by the number stored in said register, said coincidence gate also being connected to the reset input of said counter; and means to change the number stored in said storage register, said register and said counter each including a plurality of flip flops each having a "0" output and a "1" output, said coincidence gate including a first AND gate for each significant digit to be used, each said first AND gate having an input connected from a "0" output of a corresponding flip flop representing one significant digit in said storage register and another input connected from the "0" output of a corresponding flip flop representing the same significant digit in said counter, said coincidence gate also including a second AND gate for each significant digit to be used, each said second AND gate having an input connected from the "1" output of a corresponding flip flop representing one significant digit in said storage register and another input connected from a "1" output of a corresponding flip flop representing the same significant digit in said counter, each of said first and second AND gates having an output, said coincidence gate including an OR gate for each pair of AND gates corresponding to one significant digit, each OR gate having an output and inputs connected from the outputs of each corresponding pair of AND gates, said coincidence gate also including a third AND gate having an output and an input from each OR gate output, said third AND gate output being connected to said counter reset input, said coin-

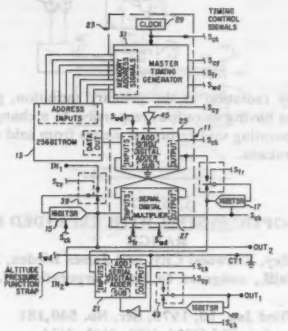
cidence output signal appearing at the output of said third AND gate.

3,962,573

DIGITAL FUNCTION GENERATOR

Lewis E. Staley, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed June 12, 1975, Ser. No. 586,480
Int. Cl.² G06F 7/38
U.S. Cl. 235—156 7 Claims



1. Digital function generator apparatus for providing an output Y from an input X according to

$$Y=f(X)=\sum_{j=0}^{n} A_jX^j$$

where the coefficients A_j are predetermined, said apparatus comprising:

first means comprising digital memory means for storing and supplying serial digital data representative of said coefficients A_0 through A_n;

second and third means comprising, respectively, serial digital adder means and serial digital multiplier means, each of said second and third means having first and second data input means and a data output means, said first data input means of said second means connected for receiving serial digital data from said first means, said first data input means of said third means connected for receiving serial digital data representative of at least one particular value x_i of the input X, said second data input means of said second means connected for receiving serial digital data from said data output means of said third means, and said second data input means of said third means connected for receiving serial digital data from said data output means of said second means;

fourth means including clock source means and timing generator means receiving the output of said clock source means, said fourth means comprising timing control means for

i. effecting multiplication by said third means of A_n and X_i such that the output of said third means is serial digital data representative of a first product $A_n{\cdot}X_i=P_1$,

ii. effecting the addition by said second means of said first product P_1 and A_{n-1} such that the output of said second means is serial digital data representative of a first sum $(P_1+A_{n-1})=W_1$,

iii. effecting the multiplication by said third means of said first sum W_1 and X_i such that the output of said third means is serial digital data representative of a second product $W_1{\cdot}X_i=P_2$,

iv. effecting the addition by said second means of P_2 and A_{n-2} so that the output of said second means is serial digital data representative of a second sum $(P_2+A_{n-2})=W_2$, and

v. repetitively effecting similar alternating multiplications and additions so as to produce a series of products and sums wherein any particular jth sum W_j is equal to P_j+A_{n-j} for $j=1$ through n, where the jth product $P_j=W_{j-1}{\cdot}X_i$ and W_0 is defined to be equal to A_n, said fourth means repetitively effecting said multiplications and additions at least until serial digital data representative of the sum $W_{n-1}{\cdot}X_i+A_0$ appears at the data output means of said second means, said sum $W_{n-1}{\cdot}X_i+A_0$ being equal to

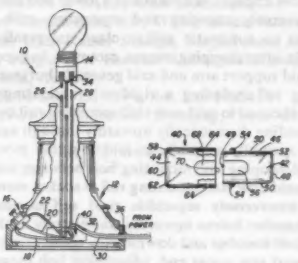
$$\sum_{j=0}^{n} A_jX_i.$$

3,962,574

LAMP WITH PROTECTIVE HOUSING OR JUNCTION BOX FOR SPLICED ELECTRICAL CONDUCTING WIRES

Nick Zurla, Chicago, Ill., assignor to Beatrice Foods Company, Chicago, Ill.

Filed June 30, 1975, Ser. No. 591,519
Int. Cl.² F21S 1/12; F21V 25/00; H02G 3/08
U.S. Cl. 240—81 BS 10 Claims



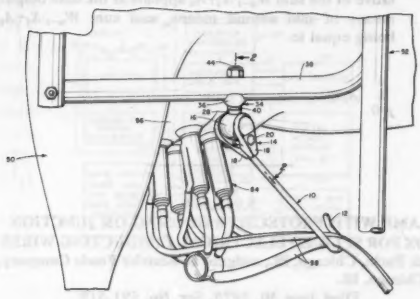
1. A combination comprising a lamp having a base with said lamp supporting an electric lamp socket,a switch on said lamp, a plurality of electrical conducting wires connecting said switch and electric lamp socket to means for connection to an electric power source, said plurality of electrical conducting wires having pairs of electrical conducting wires connected and forming a plurality of pairs of spliced connected ends, a protective housing in said base formed of a plastic fire-resistant material, said protective housing formed of two sections with said sections having means for interlocking said sections to form a single hollow housing, said housing having an opening therein communicating with the interior of said hollow housing, said plurality of electrical conducting wires extending into said housing through said opening with said plurality of spliced connected ends of said conducting wires bunched together and loosely positioned and retained within said housing, with each pair of said spliced connected ends being free for independent movement of other pairs of spliced connected ends in said housing.

3,962,575

RADIAL ARM MILK HOSE SUPPORT

Ben W. Vandenberg, 17226 Roseton Ave.; August Vandenberg, 17306 Roseton Ave., both of Artesia, Calif. 90701, and Andrew W. Vandenberg, 15751 Ryon St., Bellflower, Calif. 90706

Filed Feb. 26, 1975, Ser. No. 553,229
Int. Cl.² B42F 13/00
U.S. Cl. 248—340 3 Claims



1. In a radial arm milk hose support construction for supporting milk hoses of automatic milkers at the cow stalls; the combination of: a generally vertically downwardly projecting milk hose support arm supported projecting generally downwardly from a generally horizontal cow stall mounting rail and having hose engagement means at a lower end portion thereof for transversely engaging and supporting milk hoses connected to an automatic milker claw; universally selectively adjustable arm clamping means mounted between an upper end of said support arm and said generally horizontal cow stall mounting rail including a rigid self-lubricating plastic ball member secured to said cow stall mounting rail by a mounting bolt extending diametrically upwardly through said ball member and upwardly generally to said cow stall mounting rail, a sleeve telescoping said mounting bolt between said ball member and said cow stall mounting rail, a socket member formed of two transversely separable rigid self-lubricating plastic socket member halves upwardly transversely socket telescoping said ball member and downwardly transversely telescoping said support arm upper end, adjustment bolt means extending transversely through said socket member halves positioned vertically between said mounting bolt and said support arm upper end for transversely clamping said socket member halves over said support arm upper end and for frictionally engaging said socket member halves over said ball member permitting said universal adjustment therebetween to adjust and frictionally retain said support arm in all selected downwardly extending directions relative to said cow stall mounting rail.

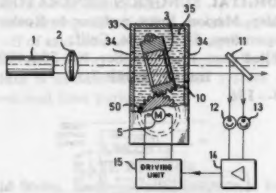
3,962,576

METHOD AND APPARATUS FOR AUTOMATIC GENERATION OF PHASE-ADAPTED COHERENT SECONDARY RADIATION IN A NON-LINEAR CRYSTAL

Jürgen Kuhl, Aalen, and Hans-Jörg Spitschan, Heidenheim (Brenz), both of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Germany

Filed Jan. 17, 1975, Ser. No. 542,016
Claims priority, application Germany, Jan. 25, 1974, 2403501
Int. Cl.³ G01J 1/20
U.S. Cl. 250—201 14 Claims

1. The method of generating in a non-linear crystal a phase-adapted coherent secondary radiation by irradiation of such crystal with coherent primary radiation of variable wavelength the frequency of the secondary radiation being changed with respect to the frequency of the primary radiation, there being a change in angle between an optical axis of the crystal and an axis of the secondary radiation as a result of changing the wavelength of the primary radiation, said method comprising the steps of providing means for re-tuning a phase adaption of



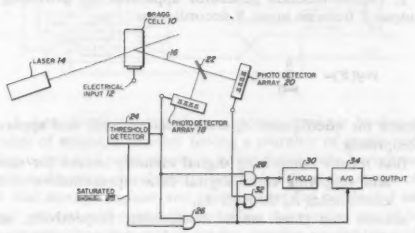
the secondary radiation to the primary radiation, providing sensing means having an output responsive to a change in said angle, and operating said re-tuning means from said output of said sensing means.

3,962,577

ELECTRO-OPTIC SYSTEM WITH EXPANDED POWER RANGE

John P. Lindley, Redwood City, and James Rieden, San Jose, both of Calif., assignors to Itek Corporation, Lexington, Mass.

Filed Jan. 10, 1975, Ser. No. 540,181
Int. Cl.² G01J 3/02, 3/42, 3/34
U.S. Cl. 250—208 5 Claims



1. An electro-optic system for detecting radiation over an extended dynamic power range and comprising:

a. a first photodetector means for detecting radiation;

b. a second photodetector means for detecting radiation;

c. means for directing radiation to be detected onto said first and second photodetector means, and including means for directing a major amount of radiation to be detected onto said first photodetector means, and means for directing a minor amount of radiation to be detected onto said second photodetector means such that said first photodetector means may be utilized to detect radiation signals having relatively weak power densities and said second photodetector means may be utilized to detect radiation signals having relatively strong power densities, whereby the dynamic power detection range of the system includes the combined power detection ranges of said first and second photodetector means; and

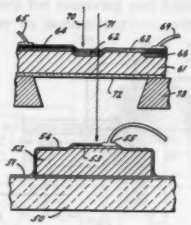
d. means for determining when the major amount of radiation directed onto said first photodetector means exceeds a given threshold level, means for coupling said first photodetector means to the output of the system until said determining means indicates that the radiation directed onto said first photodetector means exceeds said given threshold level, and means for coupling said second photodetector means to the output of the system when said determining means indicates that the radiation directed onto said first photodetector means exceeds said given threshold level.

3,962,578

TWO-COLOR PHOTOELECTRIC DETECTORS HAVING AN INTEGRAL FILTER

John Roschen, Irvine, Calif., assignor to Aeronutronic Ford Corporation, Blue Bell, Pa.

Filed Feb. 28, 1975, Ser. No. 554,193
Int. Cl.² G01J 3/50
U.S. Cl. 250—226 2 Claims



1. In a photodetector combination constructed to sense radiant energy in a plurality of wavelength bands, said combination comprising:

a first photodetector optimized for response at a first wavelength, said first photodetector constructed to be transparent to a second wavelength that is relatively longer than said first wavelength and with active elements adjacent a first face thereof,

a second photodetector optimized for response of said second wavelength, and

means for mounting said first and said second photodetectors in a cascade wherein illumination is directed onto said first face of said first photodetector,

the improvement comprising an integral filter coating formed on a second face of said first photodetector, said second face being opposite said first face and adjacent said second photodetector, said filter coating forming a bandpass radiant energy filter intermediate said first and said second photodetectors, said bandpass being selected to fall within the radiant energy wavelength response of said second photodetector.

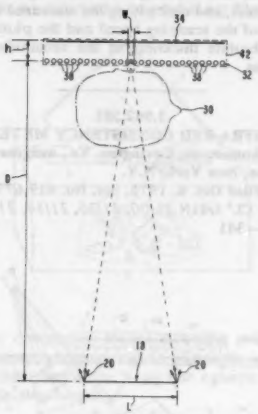
3,962,579

THREE-DIMENSIONAL RADIOGRAPHY

Douglas Fredwill Winnek, 10450 W. Loyola Drive, Los Altos Hills, Calif. 94022

Continuation of Ser. No. 447,108, Feb. 28, 1974, abandoned, which is a continuation of Ser. No. 273,653, July 20, 1972, abandoned. This application Jan. 3, 1975, Ser. No. 538,425
Int. Cl.³ G01N 23/04
U.S. Cl. 250—313 3 Claims

1. Apparatus for use in the exposure of a film for making a photograph of a three-dimensional object by X-ray radiation beams from a plurality of point sources of said radiation comprising: a grating including a support, and a plurality of parallel, spaced, transversely circular rods rigidly secured to said support, each rod being opaque to said radiation, said grating adapted to be positioned at a location between said point sources and said film to permit the beams from said sources to pass between said rods and onto the film, each rod presenting a first, elongated, convex surface to the incoming radiation from each point source, respectively, and a second elongated, convex surface opposite to the corresponding first surface and



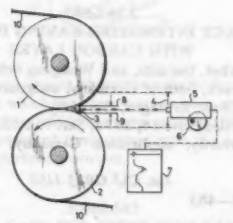
in facing relationship to said film when the grating is at said location.

3,962,580

INFRARED PROCESS FOR MEASURING THE KNEADING MASS IN A CALENDER ROLLER GAP

Franz Maier, Burgkirchen, Alz; Walter Niederstatter, Mehring-Od, and Hans-Rainer Stümpf, Burgkirchen, Alz, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 13, 1974, Ser. No. 532,416
Claims priority, application Germany, Dec. 20, 1973, 2363467
Int. Cl.² G01N 23/00
U.S. Cl. 250—340 1 Claim



1. A process for measuring without contact the thickness of a thermoplastic mass having a temperature of at least 40°C in the manufacture of a sheeting on a calender having an accumulation of material kneading mass, in the feeding region of a roller gap having a pair of pressure elements at least one of which is a roller, one of the pressure elements forming the gap being covered by the sheeting in the region of the gap and other pressure elements being bare of sheeting and kneading mass in the feeding region of the gap, the process comprising the steps of scanning at a predetermined scanning speed the region in discrete areas having a diameter of from 0.5 to 3 mm over a scanning range of from 0.2 to 3 m in a zone extending over the transitions from bare pressure element surface to kneading mass to sheeting with an infrared radiation sensor having a small field of view capable of scanning the discrete area diameters from 0.5 to 3 mm, plotting the curve of thermal radiation detected by the sensor at a predetermined plotting

speed, measuring in the plotted curve the distance "*a*" of two points of discontinuity which occurs at the transitions between kneading mass and sheeting and kneading mass and bare pressure element, and multiplying the measured distance with the quotient of the scanning speed and the plotting speed to obtain the absolute thickness of the accumulated material kneading mass.

3,962,581

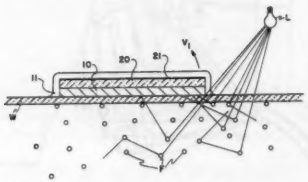
INFRA-RED CONSISTENCY METER

William E. Zimmerman, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 6, 1975, Ser. No. 619,677

Int. Cl.² G01N *21/00, 21/26, 21/34, 21/46*

U.S. Cl. 250—341 **12 Claims**



1. A method of measuring the consistency of opaque particles suspended in a translucent, fluidized slurry, said method comprising:

A. Illuminating a substantially homogenous flow stream of said slurry with a white light source of substantially constant power;

B. Filtering light originated from said source and reflected from said flow stream to permit only the substantial passage of wave-lengths greater than 0.70 microns;

C. Energizing with said filtered light a photocell that is responsive to wave-lengths within the spectrum of 0.70 microns to 1.05 microns;

D. Calibrating the electrical energy generation of said photocell relative to a known consistency of said slurry.

3,962,582

X-RAY IMAGE INTENSIFIER HAVING INPUT SCREEN WITH CARBON LAYER

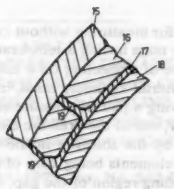
Walter Greschat, Dormitz, and Wolfgang Schubert, Erlangen-Frauenaurach, both of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Nov. 14, 1974, Ser. No. 523,796

Claims priority, application Germany, Dec. 17, 1973, 2362761

Int. Cl.² G01J *1/58*

U.S. Cl. 250—483 **3 Claims**



1. In an imput screen for electron-optical image intensifiers including a carrier; a luminescent layer on said carrier; a photocathode layer superimposed on said luminescent layer; and a dark-colored intermediate layer being interposed between said luminescent layer and said photocathode layer, the improvement comprising; said dark-colored intermediate layer being constituted of an at least approximately uniform surface coating layer of carbon for the partial transmission of light from said luminescent layer.

3,962,583

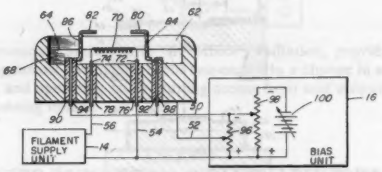
X-RAY TUBE FOCUSING MEANS

William P. Holland, West Redding, and Capleton I. Swanson, Bridgeport, both of Conn., assignors to The Machlett Laboratories, Incorporated, Stamford, Conn.

Filed Dec. 30, 1974, Ser. No. 537,225

Int. Cl.² H05G *1/30*; H01J *35/14*

U.S. Cl. 250—402 **8 Claims**



1. X-ray generating apparatus including:

an X-ray tube envelope;

an anode having a target surface disposed within the envelope;

an elongated electron emitting filament spaced from the target surface within the envelope and disposed to direct a beam of electrons onto an elongated area of the target surface;

electron focusing means comprising a plurality of conductive members insulatingly supported in fixed positional relationship with one another adjacent the filament and having longitudinal and transverse portions with respect to the filament for defining in the path of the electron beam an elongated aperture having a length less than the length of the filament, one of the conductive members being a cathode focussing cup having an elongated opening wherein the filament is insulatingly disposed in the cup to direct the electron beam through the opening and other conductive members of the focussing means comprising a pair of spaced conductive strips insulatingly supported within the cup adjacent respective end portions of the filament; and

electrical means for maintaining the anode, filament, and conductive members at different electrical potentials with respect to one another, and for maintaining at least one of the conductive members at a different electrical potential with respect to the other conductive members of the focusing means.

3,962,584

FILM-LOADING DEVICE

Joseph Munch, Deurne, Belgium, assignor to Compagnie Generale de Radiologie, Paris, France

Filed Oct. 7, 1974, Ser. No. 512,594

Claims priority, application Belgium, Oct. 12, 1973, 53139

Int. Cl.² G03B *41/16*

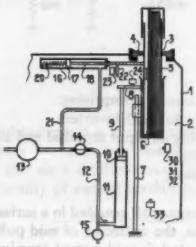
U.S. Cl. 250—468 **3 Claims**

1. In an X-ray apparatus for carrying out radiographic examinations including a housing having a compartment for light-tightly containing a supply of unexposed film; a film-loading device for introducing said film supply into said compartment in daylight, adapted to cooperate with a film container including a hollow parallelepipedic box for containing a plurality of uncovered film sheets stacked therein, having sidewalls and an open top end for introducing therein and extracting therefrom said film sheets and a removable cover for light-tightly covering said open top end having a skirt

portion for slideably surrounding said box sidewalls adjacent said open top end; said film-loading device comprising:

A. a slot within said housing provided with an elastic edge seal for providing an opening allowing the introduction of said film container box into said compartment, said edge seal being in intimate contact with said box sidewalls during said introduction thereof and providing said opening with dimensions smaller than those of the cross section of said cover skirt portion surrounding said box sidewalls so that said cover remains on top of said edge seal outside said compartment for light-tightly covering said opening during the introduction of said film container box therein;

B. bracket means for receiving and holding said film container box by its bottom portion, within said compartment;



C. means for guidedly displacing said bracket means within said compartment, from one position wherein the top end of said film container box protrudes through said opening outside said compartment, to another position wherein said box is entirely inside said compartment and vice-versa;

D. retractable slide means displaceable within said compartment from one position leaving said opening free for the introduction of a full film container box into said compartment and for ejecting an empty one therefrom, to another position adjacent said opening for light-tightly obturating it when said bracket means has reached its other position;

E. means for displacing said slide means from one of its positions to its other one and vice-versa.

3,962,585

ARRANGEMENT FOR THE LIGHT-PROJECTION OF INDICIA ONTO X-RAY FILMS

Robert Hüttner, and Gerhard Kütterer, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

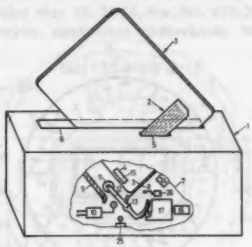
Filed Mar. 20, 1975, Ser. No. 560,232

Claims priority, application Germany, Mar. 29, 1974, 2415423

Int. Cl.² G03C *5/16*

U.S. Cl. 250—476 **6 Claims**

1. In an arrangement for the light-projection of indicia onto X-ray films, including an X-ray film cassette having a window provided in a cassette wall extending in parallel to the plane of the film; a magnetically-openable slide plate having at least a portion thereof formed of a ferromagnetic material adapted to maintain said window in a light-sealed relationship in the closed position of the window, said slide plate having a resilient tongue for maintaining the slide plate in a closed position; said slide being formed of a nonmagnetic material and being displaceably supported along the side of the window facing away from the film in cassette, said resilient tongue being formed of said ferromagnetic material; means supporting said slide plate for pivoting about an axis oriented perpendicular to the plane of the film; a carrier for the indicia to be projected onto the X-ray films; and light-projecting means for receiving said X-ray film cassette having a magnet at the inlet path of the X-ray film cassette located in position correlated to the position of the window in the inserted X-ray film cassette, the



improvement comprising: means mounting said magnet for pivotal movement about an axis in alignment with the pivot axis of said slide plate of the X-ray film cassette inserted into the light-projecting means.

3,962,586

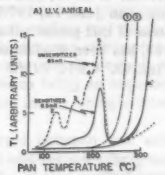
SENSITIZED THERMOLUMINESCENT PHOSPHOR AND METHOD

Michael R. Mayhugh, and Gary D. Fullerton, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 13, 1974, Ser. No. 523,322

Int. Cl.² H05B *33/00*

U.S. Cl. 250—484 **17 Claims**



1. A thermoluminescent phosphor suitable for use in radiation dosimetry in which the phosphor has been simultaneously exposed to radiations within the range of 750–100 nanometers while heated to elevated temperature with the corresponding elimination of interfering centers.

3,962,587

SHIPPING CASK FOR SPENT NUCLEAR FUEL ASSEMBLIES

Kenneth H. Dufrane, Orchard Park, N.Y.; Jack D. Rollins, Rosewell, Ga.; Ralph E. Best, Aiken, S.C.; Victor J. Barnhart, Pittsburgh, Pa.; Clifford J. Anderson, Silver Spring, Md.; Thomas H. Cox, Damascus, Md., and Robert R. Riggs, Edgewood, Md., assignors to Nuclear Fuel Services, Inc., Rockville, Md.

Filed June 25, 1974, Ser. No. 483,039

Int. Cl.² G21F *5/00*

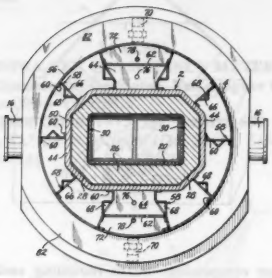
U.S. Cl. 250—506 **5 Claims**

1. A shipping cask for spent nuclear fuel assemblies, comprising:

an elongated, generally rectangular enclosure of somewhat flexible substantially flat stainless steel walls,

gamma ray shielding said enclosure and comprising a plurality of depleted uranium bodies of generally annular shape encompassing said enclosure, abutting each other, and having flat surfaces adjacent but slightly spaced from the

flat walls of said enclosure by a distance of the order of 30 to 50 thousandths of an inch whereby internal pressure in said enclosure will flex said flat walls outwardly into intimate heat-conducting contact with said flat surfaces;



a stainless steel shell enclosing said gamma ray shielding and being bonded to the outer surface thereof by heat conducting material.

3,962,588

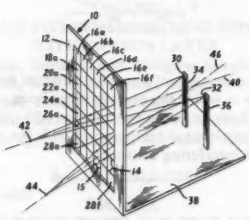
METHOD FOR MAKING RECORD OF OBJECTS

Paul L. Di Matteo, 6 Carol Court, Dix Hills, N.Y. 11746; Joseph A. Ross, 26 Trescott Path, Fort Salonga, N.Y. 11768, and Howard K. Stern, 89 Derby Ave., Greenlawn, N.Y. 11740

Continuation of Ser. No. 490,875, July 22, 1974, Pat. No. 3,934,469. This application June 12, 1975, Ser. No. 586,144 The portion of the term of this patent subsequent to Mar. 30, 1992, has been disclaimed.

Int. Cl.² G01C 11/12

U.S. Cl. 250—558 20 Claims



1. A method for use in making a record of an object from a given location comprising the steps of:

a. establishing a lens field of view extending from said given location to said object;

b. subdividing said lens field of view into a succession of adjacent separately discernible cells;

c. encoding said succession of cells by disposing discernible elements within said cells in a preselected sequence, said discernible elements being in number less than the number of said cells and being located between said given location and said object; and

d. introducing radiant energy in said lens field of view and recording radiant energy in said lens field of view definitive of said object, said succession of cells and said discernible elements, thereby making a record of such encoded cell succession superimposed on said object.

3,962,589

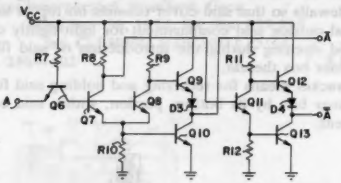
INVERTER WITH MINIMUM SKEW

Ury Priel, Cupertino, Calif., and Robert A. Anselmo, Canastota, N.Y., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 10, 1975, Ser. No. 548,189

Int. Cl.² H03K 19/40

U.S. Cl. 307—214 2 Claims



1. A two-inverter circuit comprising:

a source of voltage for said inverters,

a first inverter having an input terminal and an output terminal and including:

a pull up transistor,

a diode, and

a pull down transistor all coupled in a series circuit to said voltage source, the collector of said pull down transistor being coupled to said output terminal,

a pair of phase splitter transistors coupled in a parallel circuit to said voltage source, the emitters of said phase splitter transistors being coupled together and being coupled to the base of said pull down transistor, the collector of a first one of said phase splitter transistors being coupled to the base of said pull up transistor,

and an input transistor coupled between said input terminal and the bases of said two phase splitter transistors, and

a second inverter including:

a pull up transistor,

a diode, and

a pull down transistor all coupled in a series circuit to said voltage source, the collector of said pull down transistor being coupled to an output terminal of said second inverter,

and a phase splitter transistor coupled to said voltage source, the collector and emitter of said phase splitter being coupled to the bases of said pull up and pull down transistors, respectively, the base of said phase splitter transistor being coupled to the collector of a second one of said phase splitter transistors in said first inverter.

3,962,590

TTL COMPATIBLE LOGIC GATE CIRCUIT

Jack Kane, Bethlehem, and Richard Alan Pedersen, Allentown, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 14, 1974, Ser. No. 497,137

Int. Cl.² H03K 19/08, 19/12, 19/40; H01L 29/48

U.S. Cl. 307—214 7 Claims

1. A two transistor logic gate circuit comprising:

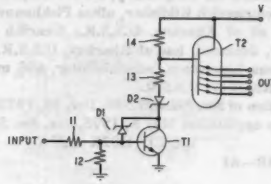
an input terminal and a plurality of output terminals,

an input transistor having the emitter connected to a first bias terminal, and a first Schottky barrier diode connected between the base and collector, the collector being connected to a second bias terminal through a series combination comprising a second Schottky barrier diode, a first resistor, and a second resistor;

an input resistance divider having a first terminal node connected to said input terminal for receiving an input signal, a second terminal node connected to said first bias

terminal, and an intermediate node connected to the base of said input transistor; and

a multi-emitter output transistor connected in an emitter follower configuration having the base connected to said



series combination at a node between said first and second resistors, the collector connected to said second bias terminal, and each emitter connected to a different one of said plurality of output terminals.

3,962,591

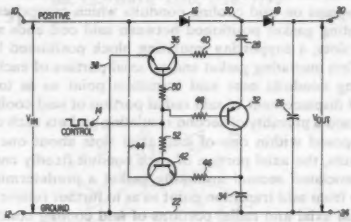
VOLTAGE DOUBLER CIRCUIT

Edward A. Popka, Ellicott City, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 23, 1974, Ser. No. 535,244

Int. Cl.² H03K *1/14*; H02M *3/10*

U.S. Cl. 307—264 **8 Claims**



1. A voltage doubling circuit comprising:

input terminal means adapted to be coupled to a source of DC potential having a predetermined magnitude,

output terminal means coupled to said input terminal means for supplying an output voltage having a magnitude twice that of said input voltage,

first charge storage means coupled across said output terminal means for supplying an output voltage thereto,

charging circuit means coupled in parallel with said first charge storage means for controlling the charging thereof, said charging circuit means including an electronic switch having a single on-off function interposed in series between second and third charge storage means; and

control circuit means coupled to said charging circuit means for controlling the operation thereof.

3,962,592

CURRENT SOURCE CIRCUIT ARRANGEMENT

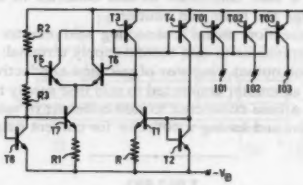
Werner Thommen, Uitikon, and Arpad Korom, Zurich, both of Switzerland, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 15, 1974, Ser. No. 470,273

Claims priority, application Netherlands, May 28, 1973, 7307378

Int. Cl.² H03F *3/18*

U.S. Cl. 307—297 **8 Claims**



1. A current source circuit, comprising;

first and second voltage supply terminals;

a first transistor of first conductivity type having an emitter connected to said first supply terminal and having a base and a collector;

a second transistor of second conductivity type having a collector connected to said collector of said first transistor and having a base and an emitter;

a third transistor of said first conductivity type having a base connected to said base of said first transistor, having a collector connected to said base of said second transistor and having an emitter;

first connection means connecting said emitter of said second transistor to said second supply terminal;

second connection means connecting said emitter of said third transistor to said first supply terminal, one of said connection means being an impedance and the other of said connection means being a direct electrical connection;

a diode connected between said collector of said third transistor and said second supply terminal;

a fourth transistor of said second conductivity type having a collector connected to said first supply terminal, having a base connected to said collector of said first transistor and having an emitter;

a fifth transistor of said second conductivity type having a collector connected to said base of said first transistor, having an emitter connected to said emitter of said fourth transistor and having a base;

means for applying a reference voltage to said base of said fifth transistor;

means for supplying a constant current to said connected emitters of said fourth and fifth transistors; and

at least one output transistor of said first conductivity type having an emitter connected to said first supply terminal, having a base connected to said collector of said fifth transistor and having a collector for current output.

3. A current source circuit comprising:

first and second voltage supply terminals;

a first transistor of first conductivity type having an emitter, a base and a collector;

a second transistor of second conductivity type having a collector connected to said collector of said first transistor, having an emitter connected to said second supply terminal and having a base;

a third transistor of said first conductivity type having an emitter connected to said first supply terminal, having a base connected to said base of said first transistor and having a collector connected to said base of said second transistor;

a diode having a first electrode connected to said collector of said third transistor and having a second electrode;

first connection means connecting said emitter of said first transistor to said first supply terminal;

second connection means connecting said second electrode of said diode to said second supply terminal, one of said connection means being an impedance and the other of said connection means being a direct electrical connection;

a fourth transistor of said second conductivity type having a collector connected to said base of said first transistor, having a base connected to said collector of said first transistor and having an emitter;

third connection means connecting said emitter of said fourth transistor to said second supply terminal; and

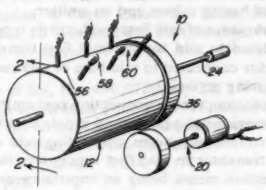
at least one output transistor of said first conductivity type having an emitter connected to said first supply terminal, having a base connected to said collector of said fourth transistor and having a collector for current output.

3,962,593

ELECTROMAGNETIC MOTOR

James H. Bowen, Atlanta, Ga., assignor to BDH, Inc., Rome, Ga.

Filed Apr. 1, 1975, Ser. No. 564,139
Int. Cl.² H02K 7/20
U.S. Cl. 310—46 **6 Claims**



1. An electromagnetic impulse motor, comprising, in combination:

a stator;

a rotor arranged for rotation relative to the stator and cooperating with the stator to form a stator-rotor assembly;

a permanent magnet mounted on the rotor;

electromagnet means mounted on the stator for impulsing the permanent magnet and causing rotation of the rotor; and

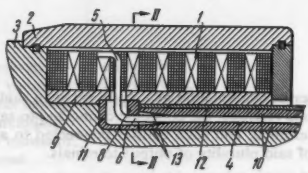
variable speed timing means electrically connected to the electromagnet means for pulsing the latter as a function of the speed of the variable speed timing means and controlling the speed of rotation of the rotor, the stator including a framework constructed from a non-magnetic material, the rotor including a shaft rotatably mounted on the framework, a plurality of flywheels having peripheries and being mounted on the shaft for rotating same, the flywheels being constructed from a non-magnetic material, the permanent magnet being a plurality of permanent magnets mounted on the peripheries of the flywheels, each of the flywheels being a disc having a periphery provided with a plurality of notches equally spaced around the periphery of a groove at the apex of each notch, the notches forming seats for the permanent magnets with a portion of each permanent magnet being held in the groove associated with the respective notch, the permanent magnets and electromagnets being advantageously with opposite poles thereof adjacent one another for creating only attraction forces between the permanent magnets and electromagnets.

3,962,594

ROTOR WINDING OF ELECTRIC MACHINES

Boris Leonidovich Konovalov, 603 mikroraion, 1, kv. 346; Evgeny Khaimovich Glider, ulitsa Beketova, 19/13, kv. 40; Oleg Borisovich Gradov, ulitsa Kosiora, 6, kv. 64; David Bentsionovich Karpman, ulitsa Frantisheka Krala, 49, kv. 54; Boris Volkovich Spivak, ulitsa Kosiora, 56, kv. 55; Alexandr Abramovich Chigirinsky, ulitsa Kuibysheva, 11, kv. 8; Vasily Semenovich Kildishev, ulitsa Plekhanovskaya, 41/43, kv. 55, all of Kharkov, U.S.S.R.; Genrikh Nukhimovich Linetsky, deceased, late of Kharkov, U.S.S.R., and by Ella Semenovna Linetskaya, administrator, 606 mikroraion 17, kv. 92, Kharkov, U.S.S.R.

Continuation of Ser. No. 429,396, Dec. 28, 1973, abandoned.
This application May 5, 1975, Ser. No. 574,469
Int. Cl.² H02K 1/32
U.S. Cl. 310—61 **1 Claim**



1. In an electric machine having a rotor shaft, a plurality of axial slots formed in said shaft, a rotor winding having coil ends disposed circumferentially about said shaft, a plurality of cooling conduits for supplying said winding with a cooling liquid, and a tread ring disposed circumferentially about said coil ends, said cooling conduits having radial and axial portions with respect to said shaft, said axial portions positioned within said axial slots, the points at which said axial portions meet said radial portions defining a transition point of said conduits, the improvement which comprises means for reducing stresses on said cooling conduits which comprises: a first insulating gasket positioned between said coil ends and said axial slots; a supporting insulating block positioned between said first insulating gasket and an axial portion of each of said cooling conduits near said transition point so as to permit radial displacement of said radial portion of said cooling conduit; and a plurality of second insulating gaskets each of which is disposed within one of said axial slots about one of said conduits, the axial portion of each conduit fixedly contacting its associated second insulating gasket a predetermined distance from said transition point so as to further relieve stresses on said axial and radial portions of said cooling conduits.

3,962,595

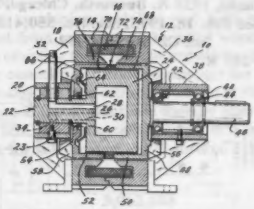
MAGNETIC PARTICLE BRAKE

Gerald R. Eddens, St. Louis County, Mo., assignor to W. J. Industries, Incorporated, St. Louis, Mo.

Filed Dec. 20, 1974, Ser. No. 534,716
Int. Cl.² H02K 49/00
U.S. Cl. 310—93 **17 Claims**

1. A magnetic particle brake device comprising a stationary member including a housing portion constructed of magnetic material, said housing having an annular cavity defined in part by spaced annular inner housing portions, a coil mounted in said housing cavity, means connecting said coil to a source of electric energy, a movable member mounted in said stationary member, said movable member including a pair of spaced annular magnetic portions connected together by non-magnetic connecting means to define a flux gap therebetween, the portions of said spaced pair being located closely adjacent to respective ones of the spaced annular inner housing portions, another stationary magnetic member positioned on the opposite side of said pair of spaced movable portions from the spaced housing portions and including a portion with a smooth

annular surface that extends across and closely adjacent to said spaced movable portions and to the non-magnetic connecting means therebetween so that a magnetic flux path produced when the coil is energized extends from the spaced housing portions through the respective spaced portions of the



movable member and through the other stationary magnetic member, and particles of a magnetizeable substance positioned in the space between the movable member and said other stationary member, said particles forming parts of the flux path produced when the coil is energized.

3,962,596

FILAMENT SHIELDS

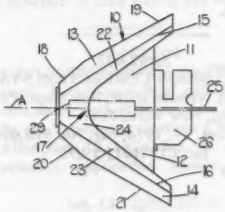
Geoffrey Roland Draper, Kettering, England, assignor to British Sealed Beams Limited, Corby, England

Filed Nov. 4, 1974, Ser. No. 520,785

Claims priority, application United Kingdom, Nov. 14, 1973, 52867/73

Int. Cl.² H01K *1/26, 1/18, 7/02*

U.S. Cl. 313—117 **10 Claims**



1. A filament shield for a parabolic reflector lamp unit, comprising a body having a recess therein said recess having a base and receiving, in use, a filament to be shielded so that the filament is spaced from the base, said recess being bounded on two opposed edges by a pair of surfaces, an inner edge of each said surface being linear and disposed at an angle to an axis along which the filament is destined to lie in use, said inner edge of each said surface being spaced from said axis, and an outer edge of each said surface being inclined at a greater angle to said axis than the respective inner edge so that each said surface tapers inwardly toward a focal point of the parabolic reflector lamp unit when said filament shield is mounted in said lamp unit.

3,962,597

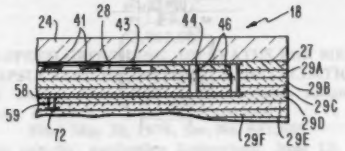
GAS DISCHARGE DISPLAY PANEL INCLUDING ELECTRODE CONNECTIONS IN PLURALITY OF NON-CONDUCTIVE LAYERS

Kendall Clark, Poughkeepsie; Alan D. Lemberger, Wappinger Falls, and Milton R. Shapiro, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 1, 1974, Ser. No. 484,647

Int. Cl.² H01J *5/52, 11/02, 61/30, 61/36*

U.S. Cl. 313—188 **27 Claims**



1. A gas discharge display panel having front and rear cover plates with transversely intersecting confronting electrodes in spaced apart relation therebetween, at least said electrodes associated with said rear cover plate being positioned on one outer surface of said rear cover plate; said rear cover plate including a plurality of discrete layers of nonconductive material with conductors extending therethrough and connecting said electrodes; and means defining a hermetically sealed gas filled chamber intermediate said plates at least between said electrodes.

3,962,598

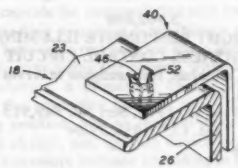
MEANS FOR RESTRICTING MOVEMENT OF A SHADOW MASK IN A DIRECTION TRANSVERSE TO THE LONGITUDINAL AXIS OF A COLOR CATHODE RAY TUBE

Rudolph R. Schneider, Jr., Syracuse, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Apr. 16, 1973, Ser. No. 351,462

Int. Cl.² H01J *29/02, 29/07*

U.S. Cl. 313—406 **5 Claims**



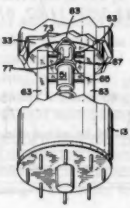
1. In a rectangular color picture tube of the shadow mask variety, said tube having a face plate portion with a luminescent screen formed on an interior surface thereof, said shadow mask being mounted within said face plate and comprising a relatively fragile foraminated portion affixed to a relatively rigid circumferential frame and wherein said mask is positioned in said face plate by means of three springs attached to said mask which cooperate with three studs affixed in walls of said face plate, one spring being attached to a long side of said mask and the other two springs being substantially oppositely disposed on the short side of said mask, the improvement comprising: means associated with said short side springs for substantially restricting movement of said mask in a direction transverse to the longitudinal axis of said tube, said means for restricting movement of said mask including at least one section that extends between said stud and said frame and is spaced from said frame.

3,962,599

SHIELDING MEANS FOR CATHODE RAY TUBE

Donald L. Say, Waterloo, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 25, 1974, Ser. No. 526,720
Int. Cl.² H01J 29/02, 29/56
U.S. Cl. 313—449 10 Claims



1. An improvement in a cathode ray tube having an envelope with a cathodoluminescent screen formed on the viewing panel portion, a conductive coating interiorly disposed on the funnel and the upper neck portions, and a related multi-electrode electron gun assembly positioned in the glass neck portion in a manner to beam electrons to said screen, said gun assembly including in the forward region thereof neck contacting snubber means, a focusing electrode and a forwardly positioned high voltage accelerating electrode, said sequentially related electrodes having spatially related portions formed as outwardly rolled rims to provide rounded adjacently related surfaces, said improvement being shielding means comprising:

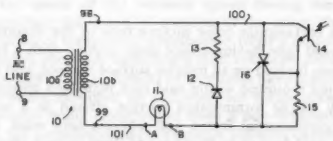
an element formed of round wire material configurated as a substantially U-shaped member having a bottom bridge and a pair of extending legs, the legs of said member being both attached to the side of at least one of said electrodes in a manner whereof the bottom bridge portion of said U-shaped member is fabricated to partially follow the peripheral contour of and be substantially contiguous with the rolled rim of said electrode extending outward therefrom toward but not touching the adjacent glass wall of said neck portion.

3,962,600

AMBIENT LIGHT RESPONSIVE ILLUMINATION BRIGHTNESS CONTROL CIRCUIT

Carl R. Pittman, Columbus, Ind., assignor to Arvin Hong Kong Ltd., Columbus, Ind.

Filed Feb. 14, 1975, Ser. No. 549,913
Int. Cl.² H05B 39/04
U.S. Cl. 315—158 9 Claims



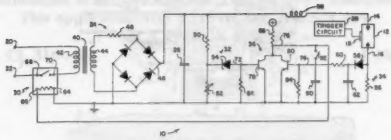
1. A controllable illuminating system comprising a power supply, a pair of terminals adapted to be coupled to said power supply, illuminating means coupled to one of said terminals, and control means coupled to said illuminating means and to the other of said pair of terminals, said control means having a diode coupled for inducing current flow of a first polarity from one of said terminals through said illuminating means and light sensitive circuit means coupled for controllably inducing current flow of opposite polarity from one of said terminals through said illuminating means in response to the ambient light level where said control means is located for varying the power supplied to said illuminating means thereby varying the intensity of illumination emitted from said illuminating means in response to said ambient light level.

3,962,601

ZERO CROSSING RELAY CONTROLLED CIRCUIT FOR HIGH POWER DISCHARGE DEVICES

Stanley Wrzesinski, 1535 N. Bosworth, Chicago, Ill. 60622

Filed Feb. 18, 1975, Ser. No. 550,415
Int. Cl.² H05B 41/32
U.S. Cl. 315—241 R 5 Claims



1. A circuit for operating high power discharge devices comprising in combination:

trigger means coupled to said discharge device for producing a discharge condition in said discharge device;

an energy storage circuit including capacitive reactance coupled to said discharge device for discharging through said discharge device when said discharge device is in a discharge condition;

charging means coupled between a power source and said energy storage circuit for charging said energy storage circuit;

switching means comprising a zero crossing solid state relay coupled to said charging means for selectively disabling and enabling said charging means;

first sensing means for sensing the level of charging of said energy storage circuit;

second sensing means for sensing the occurrence of discharge in said discharge device; and

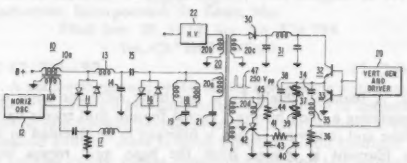
control means coupled between said first and second sensing means and said switching means for disabling said charging circuit in response to the existence of a predetermined charge level of said energy storage circuit and in response to the occurrence of discharge in said discharge device.

3,962,602

SIDE PINCUSHION CORRECTION SYSTEM

Wolfgang Friedrich Wilhelm Dietz, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 27, 1974, Ser. No. 510,096
Int. Cl.² H01J 29/70
U.S. Cl. 315—370 7 Claims



1. A side pincushion correction circuit comprising:

a line output transformer;

a line deflection winding;

a line deflection generator coupled to said deflection winding and to a first winding of said transformer for inducing energy therein for defining trace and retrace intervals during each line deflection cycle;

a series coupled inductance and active current conducting device coupled in parallel with a second winding of said line transformer;

first waveshaping means coupled to a winding of said transformer for shaping retrace interval waveforms obtained from said winding;

a field rate deflection generator;

second waveshaping means coupled to said field rate generator; and

means for combining said line and field rate waveforms obtained from said first and second waveshaping means and for coupling them to a control electrode of said active current conducting device to conduct for different durations during the line retrace intervals at the field rate for loading said transformer and thereby altering the current in said line rate deflection winding in a manner to compensate for side pincushion distortion.

3,962,603

CIRCUIT ARRANGEMENT IN TELEVISION DISPLAY APPARATUS FOR CORRECTING THE HORIZONTAL LINEARITY

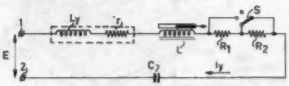
Johannus Gerhardus Jozef Van der Vegt, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 20, 1975, Ser. No. 542,350

Claims priority, application Netherlands, Feb. 1, 1974, 7401402

Int. Cl.² H01J 29/56

U.S. Cl. 315—370 **5 Claims**



1. A circuit arrangement for correcting the linearity of the deflection current flowing through a line deflection coil, said circuit comprising a series arrangement means for coupling to said coil and including a correction inductor having a premagnetized core across which series arrangement a substantially constant voltage is present during the deflection interval, and a network means for providing a voltage which is a substantially linear function of time during the deflection interval.

3,962,604

DEFLECTION SYSTEM FOR A CATHODE RAY TUBE

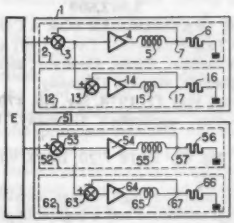
Roger Guénard, Aulnay-sous-Bois, and Jean-Claude Bonno, Bruyeres-le-Chatel, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, France

Filed June 12, 1974, Ser. No. 478,734

Claims priority, application France, June 13, 1973, 73.21484

Int. Cl.² H01J 29/70

U.S. Cl. 315—391 **7 Claims**



6. A deflection system for a cathode ray tube comprising a horizontal deflection device and a vertical deflection device, each of said horizontal and vertical deflection devices including a slow response deflection circuit and a rapid response deflection circuit,

means for applying a deflection signal to said slow response deflection circuit of each of said horizontal and vertical deflection devices, and

means for applying a control signal generated by said slow respsonse deflection circuit to said rapid response deflection circuit of each of said horizontal and vertical deflection devices, said control signal being a measure of signal delay in said slow response deflection circuit.

3,962,605

HIGH-SPEED GROUNDING APPARATUS FOR METAL ENCAPSULATED HIGH-VOLTAGE INSTALLATIONS

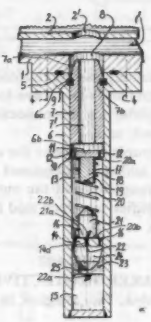
Richard Thaler, Unterentfelden, Switzerland, assignor to Sprecher & Schuh AG, Aarau, Switzerland

Filed May 28, 1975, Ser. No. 581,685

Claims priority, application Switzerland, June 13, 1974, 8125/74

Int. Cl.² H02H 7/22

U.S. Cl. 317—16 **9 Claims**



1. A high-speed grounding apparatus for a metal encapsulated high-voltage switching installation incorporating a conductor, a capsule for encapsulating said conductor, said high-speed grounding apparatus comprising a grounding bolt displaceable between a rest position into a grounding position for electrically connecting the capsule with the therein encapsulated conductor, a propellent charge which when ignited displaces the grounding bolt out of its rest position into its grounding position, and an ignition device provided for the propellent charge, said ignition device being triggered in response to a pressure increase prevailing in the switching installation.

3,962,606

SENSOR FOR A GROUND FAULT CIRCUIT INTERRUPTER

Edward P. Burns, Danbury, Conn., and Herbert W. McCord, Warren, N.J., assignors to General Signal Corporation, Rochester, N.Y.

Filed Oct. 9, 1974, Ser. No. 513,365

Int. Cl.² H02H 3/28

U.S. Cl. 317—18 D **10 Claims**

1. A protection device responsive to a ground fault current comprising in combination:

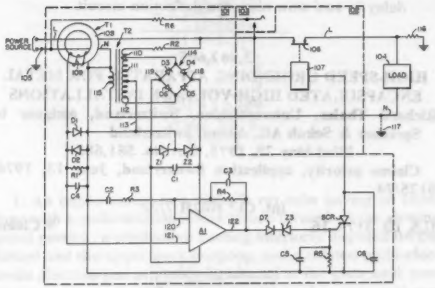
a. a differential sensing transformer having first and second primary windings in series, respectively, with the live and neutral conductors supplying power from a power source to a load;

b. a second transformer having one winding in series with said neutral conductor and having a second winding with

a part thereof coupled across said live and neutral conductors as an auto-transformer;

c. a diode bridge having its input supplied by said auto-transformer and its output coupled to an operational amplifier as a power supply therefor;

d. a sensing winding on said differential sensing transformer responsive to a difference of current in said live and neutral conductors for providing an input to said operational amplifier;



e. a disconnect actuating means coupled across said live and neutral conductors and responsive to an output from said operational amplifier for disconnecting said live conductor from said load; and

f. control means coupled between the output of said operational amplifier and said disconnect actuating means for controlling the magnitude of the output signal from said operational amplifier to which said disconnect actuating means responds.

3,962,607

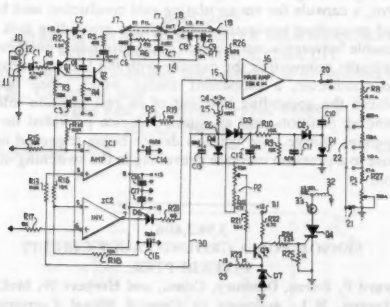
LOUDSPEAKER PROTECTIVE SYSTEM

Wade D. Burns, Roslyn, Pa., assignor to Dynaco Inc., Blackwood, N.J.

Filed June 5, 1974, Ser. No. 476,389

Int. Cl.[2] H02H *3/20, 7/20*

U.S. Cl. 317—31 **8 Claims**



1. In a protective circuit, a loudspeaker, a source of audio signal, a power amplifier having an input terminal and an output terminal, means connecting said source to said input terminal, means connecting said loudspeaker to said output terminal, means for deriving a predetermined fraction of the voltage at said output terminal at a further terminal, means rectifying the voltage on said further terminal and deriving a peak rectified voltage, accumulator means for accumulating said peak rectified voltage, said accumulator means having a relatively long time constant on discharge and a relatively short time constant on charge, a voltage responsive control circuit, means coupling said accumulator means to said voltage responsive control circuit, said means coupling including diode means poled to be forward biased by the voltage of said accumulator means, reference voltage means biasing said diode means to render said diode means non-conductive of said voltage of said accumulator means only while said voltage of said accumulator means is below a predetermined level indicative of a safe level of voltage drive of said loudspeaker, and means responsive to conductivity of said diode means for controlling by-pass of peaks of voltage at said input terminal as a function of said voltage of said accumulator means only sufficiently to reduce voltage into said loudspeaker to said safe level.

3,962,608

APPARATUS FOR HOLDING AND COOLING ELECTRONIC CIRCUIT BOARDS IN REMOTE-CONTROLLED TYPEWRITERS

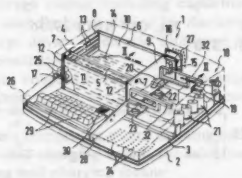
Franz Forster, Landshut, and Paul Bauer, Ergolding, both of Germany, assignors to Forster Electronic GmbH, Landshut-Ergolding, Germany

Filed July 1, 1974, Ser. No. 484,711

Claims priority, application Germany, July 13, 1973, 2335735

Int. Cl.[2] H05K *7/20*

U.S. Cl. 317—100 **11 Claims**



1. An arrangement for processing copy for remote-controlled typewriters, comprising, in combination, a box-shaped frame holding circuit boards having electronic components; a plurality of guides on said frame supporting said circuit boards, said circuit boards being located one above the other; means for rotating about a horizontal axis of the rear wall of said frame; a first window on said rear wall and spanning substantially said circuit boards located one above the other; blower means connected externally to said first window; and a second window in the region of said frame lying diagonally opposite said first window, said second window being substantially as high as said first window, said blower means directing cooling air along a path free from passing through said circuit boards, said path being free of substantially sharp flow deflections; said cooling air contacting substantially the entire surfaces of said circuit boards, said first and second windows being located also adjacent to one pair of diagonally opposite corners of each circuit board.

3,962,609

VOLTAGE TRANSFORMER FOR A COMPLETELY INSULATED HIGH-VOLTAGE INSTALLATION

Bishwarup Chaudhuri, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 17, 1974, Ser. No. 470,981

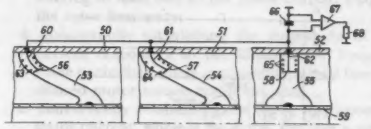
Claims priority, application Germany, May 17, 1973, 2325449

Int. Cl.[2] H01B *7/20;* **H05K** *9/00*

U.S. Cl. 317—103 **5 Claims**

1. In a fully-insulated, high-voltage installation including a grounded metal enclosure and a high-voltage conductor contained in the metal enclosure, a voltage transformer comprising: a supporting insulator centrally supporting the high-voltage conductor in the metal enclosure; a low-voltage electrode embedded in said supporting insulator so as to be in spaced relation to the high-voltage conductor, said low-voltage elec-

trode and the high-voltage conductor conjointly defining a high-voltage capacitor; a low-voltage capacitor connected to said high-voltage capacitor, said high-voltage capacitor and said low-voltage capacitor conjointly defining a capacitive voltage divider; connecting means connecting said low-voltage capacitor to said low-voltage electrode embedded in said



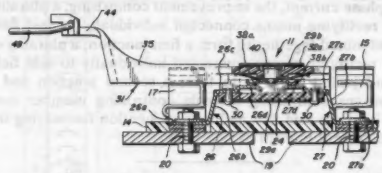
support insulator, said connecting means being a connecting lead extending within said supporting insulator; and, control electrode means embedded in said supporting insulator in surrounding relation to said connecting lead whereby a significant alteration of the pattern of the electric field lines within the metal enclosure is precluded.

3,962,610

MANUAL BY-PASS DEVICE FOR METER SOCKETS

Ronald H. Reed, Versailles, and Raymond A. Diersing, Lexington, both of Ky., assignors to Square D Company, Park Ridge, Ill.

Filed Aug. 21, 1974, Ser. No. 499,366
Int. Cl.[2] H02B 9/00
U.S. Cl. 317—108 **6 Claims**



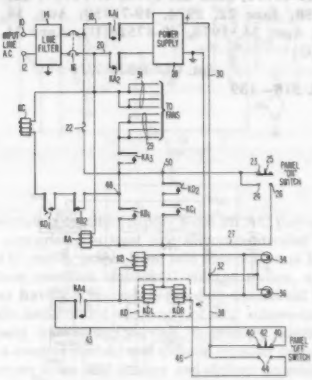
1. The combination with a meter socket for a watt-hour meter having four contact blades extending outwardly therefrom, the meter socket including a front wall having an opening therein for accommodating a meter, a meter mounting ring mountable on the front wall about the opening for restraining the meter in place in the socket, four spring-jaw terminals mounted in the socket in alignment with the opening in the front wall for receiving the contact blades of the meter, respectively, two of the spring-jaw terminals being load terminals for connection to a load, and two of the spring-jaw terminals being line terminals for connection to power supply lines, of a manual by-pass device operable to provide continuous electrical service through the socket when the meter is removed from the socket and the contact blades are removed from the spring-jaw terminals, the by-pass device comprising four stationary contact brackets each having a base portion and a contact portion at opposite ends of an intermediate spacing portion, the base portions of the brackets being electrically connected to the spring-jaw terminals, respectively, the contact portions of the brackets being co-planar and spaced toward the front wall of the socket from the base portions by the respective spacing portions, two of the brackets connected to the spring-jaw terminals which are line terminals and the contact portions thereof being in side-by-side relation and the contact portions of the brackets connected to the spring-jaw terminals which are load terminals and the contact portions thereof being in side-by-side relation, an insulating base supported by the contact portions and positioned inwardly of the front wall therefrom, a slider reciprocally mounted on the insulating base and having two contact bridges mounted thereon, each contact bridge being aligned with two of the contact portions which are in side-by-side relation with the other two contact portions so as to be engageable therewith and disengageable therefrom upon reciprocation of the slider, biasing means between the slider and the contact bridges biasing the contact bridges inwardly of the front wall toward the contact portions, a handle portion of the slider extending outwardly to engage the meter mounting ring when the ring is mounted on the front wall and positioning the contact bridges in disengaged position with respect to the contact portions, the slider being capable of reciprocable movement only when the meter mounting ring is disengaged from the front cover to cause engagement of the contact bridges with the contact portions thereby to provide an alternate current path between the line and load terminals.

3,962,611

AUTOMATIC POWER RESTART FOR UNATTENDED ELECTRICAL EQUIPMENT

Bruce Jeffrey Miller, Malvern, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 19, 1975, Ser. No. 578,827
Int. Cl.[2] H03H 7/30
U.S. Cl. 317—154 **6 Claims**



1. An automatic power restart circuit for use in a system having independent "ON" and "OFF" control means and in which AC power is delivered on a pair of lines to a DC power supply having at least a pair of output terminals, comprising:

a plurality of electrical relays each having at least a set of contacts associated therewith,

a first subcircuit having three parallel branches connected between a pair of nodes, one of said branches including said "ON" control means, means coupling one of said pair of nodes to one of said AC lines, a first of said plurality of relays having its coil interposed between the other of said nodes and the other of said AC lines,

a second subcircuit including said "OFF" control means connected in series with one of said power supply terminals, the disposition of said "OFF" control means providing selectively a pair of alternate circuit paths, a second of said relays being of the "latch-in" variety and having coil means for providing both latching and reset functions, a third relay having its coil connected in parallel with the latching coil means of said second relay and both being included in a first of said alternate circuit paths, the second of said circuit paths including the reset coil means of said second relay,

a third subcircuit connected across said AC lines, a fourth of said relays having its coil included in said third subcircuit,

said first relay having at least one set of normally open contacts interposed between said AC lines and said power

supply and a second set of normally open contacts connected in series relationship with the parallel combination of said second relay latching coil means and said third relay coil in said second subcircuit,

a second of said parallel branches in said first subcircuit including in series one set of contacts of said second relay, and the normally open contacts of said fourth relay, the third of said branches in said first subcircuit including a set of normally open contacts of said third relay,

said third subcircuit further including in series with said fourth relay coil another set of contacts of said second relay and a second normally closed set of contacts of said third relay.

3,962,612

CONTROL DEVICE FOR ELECTRIC VEHICLE

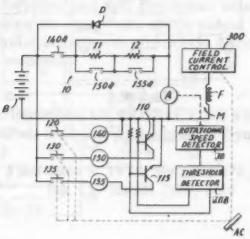
Toshikazu Kawasaki, Suita, Japan, assignor to Daihatsu Motor Co., Inc., Japan

Filed Oct. 8, 1974, Ser. No. 513,130

Claims priority, application Japan, Oct. 12, 1973, 48-114966; Oct. 12, 1973, 48-114967; Apr. 22, 1974, 49-45656; Apr. 22, 1974, 49-45657; Apr. 24, 1974, 49-46790; Apr. 24, 1974, 49-46791; June 22, 1974, 49-71757; June 22, 1974, 49-71758; June 22, 1974, 49-71759; Aug. 14, 1974, 49-93591; Apr. 24, 1974, 49-47518[U]; Apr. 24, 1974, 49-47519[U]

Int. Cl.² H02P 7/14

U.S. Cl. 318—139 **22 Claims**



1. A control device for an electric vehicle comprising:

an electrical power source;

a DC shunt or compound motor for driving said electric vehicle, said motor comprising an armature and a shunt field coil being connected so as to be energized by said electrical power source;

means for adjusting the rotational speed of said motor, wherein said means for adjusting has a range of positions and is continuously adjustable from a start position to positions throughout its range;

switching control means responsive to said speed adjusting means for selectively applying values of armature terminal voltage to said armature; and

field coil current control means responsive to said speed adjusting means throughout said range for continuously controlling the current flowing through said shunt field coil, whereby the rotational speed of said motor is controlled to a value determined by the applied armature terminal voltage selected by said switching control means and the current flowing through said shunt field coil continuously controlled by said field coil current control means.

3,962,613

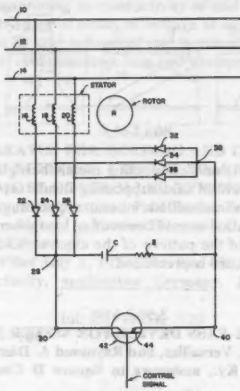
POLYPHASE AC MOTOR CONTROL

Robert D. Barry, Lockport, N.Y., assignor to Wer Industrial Division of Emerson Electric Co., Grand Island, N.Y.

Filed Jan. 31, 1973, Ser. No. 328,445

Int. Cl.² N02P 5/40

U.S. Cl. 318—225 R **6 Claims**



1. In a polyphase alternating current motor having a plurality of field coils each having one side connected to a source of polyphase current, the improvement comprising; a plurality of first rectifying means connected individually to said field coils and joined together to form a first junction, a plurality of second rectifying means connected individually to said field coils and joined together to form a second junction and a single means comprising a single controlling member connected between said first and second junction for varying the average current in each of said coils.

3,962,614

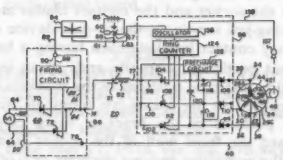
METHOD FOR CONTROLLING THE OUTPUT CONDITION OF A SELF EXCITED ALTERNATING CURRENT INDUCTION MOTOR

Charles E. Rettig, Brookfield, Wis., assignor to Litton Industrial Products, Inc., Milwaukee, Wis.

Continuation of Ser. No. 337,294, March 2, 1973, abandoned, which is a division of Ser. No. 82,302, Oct. 20, 1970, abandoned. This application Oct. 18, 1974, Ser. No. 515,936

Int. Cl.² H02P 5/40

U.S. Cl. 318—227 **38 Claims**



1. The method of producing a desired torque condition in an induction motor having a stator winding producing a motor flux controllable to a desired level by the magnitude of a stator current having a frequency characteristic, said motor also including a rotor the rotary condition of which is definable in terms of a rotor frequency which is referenced to the stator winding, and said motor being capable of having a slip fre-

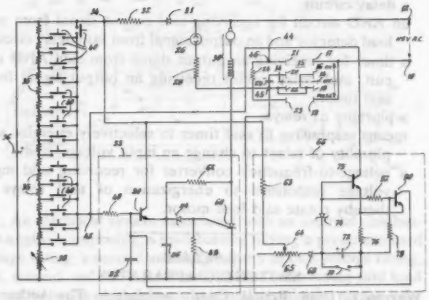
quency therein equal to the algebraic summation of the rotor frequency and the stator current frequency, said method comprising the steps of:

a. providing an adjustable stator current for the motor;
b. sensing the existing rotor frequency of the rotor;
c. establishing the slip frequency of the motor at a value proportional to the desired motor torque condition by altering at least one of the stator current frequency and the rotor frequency;
d. concurrently establishing the magnitude of the stator current responsive to the sensed rotor frequency to a value prescribed solely as a predetermined function of the desired motor torque condition; and
e. concurrently establishing the phase displacement of the stator current, wherein the stator winding is energized by the stator current phase displaceable with respect to a flux producing exciting current, at a value prescribed solely as a predetermined function of the desired motor torque condition, the concurrent predetermined establishment of the stator current magnitude and phase displacement values establishes the motor flux at a desired level while generating the desired torque condition in the motor.

3,962,615
MULTIPLE MODE VARIABLE SPEED MOTOR CONTROL CIRCUIT

Searle T. Spangler, 2 Florian Court, Westport, Conn. 06880

Filed Mar. 20, 1974, Ser. No. 452,711
Int. Cl.² H02P 5/16
U.S. Cl. 318—305 **6 Claims**



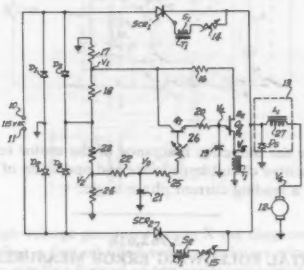
1. A variable speed motor control circuit adapted to be actuated momentarily by push buttons for running the motor at a predetermined speed after the selected push button is released, comprising

a. a source of potential,
b. a master control switch coupled to said source of potential,
c. a plurality of serially connected resistors adapted to be coupled to said source of potential by said master control switch for providing a control voltage thereon,
d. a plurality of push button switches capable of being momentarily operated, selectively coupled to said resistors and having a common output for providing thereat a different control voltage in accordance with the push button selected,
e. a motor,
f. a motor control circuit having an imput coupled to said common output of said push button switches and an output coupled to said motor for controlling the speed of said motor in accordance with the push button depressed,
g. said motor control circuit having a high betaa transistor, a zener diode and a silicon controlled rectifier, said high beta transistor having an input thereof coupled to said common output of said push button switches and an output coupled to said zener diode, said silicon controlled rectifier coupled to said zener diode and to said motor whereby said motor speed is controlled by the controlled voltage applied to said transistor which controls said zener diode for switching said silicon controlled rectifier to apply power to said motor, and
h. memory means coupled to the input of said motor control circuit for providing a predetermined control voltage to said motor control circuit in accordance with the push button selected thereby requiring only a momentary activation of the push button selected.

3,962,616
START-UP CONTROL FOR DC MOTORS

Robert L. Smith, Granville, Ill., assignor to Electronic Memories and Magnetics Corporation, Los Angeles, Calif.

Filed Sept. 6, 1974, Ser. No. 503,972
Int. Cl.² H02P 1/18
U.S. Cl. 318—400 **8 Claims**



1. A controlled rectifier supply from an AC power source to a load comprising at least one silicon-controlled rectifier connected to rectify power from said source to said load, and thus produce rectified sinusoidal voltage pulses, a control transformer having a secondary winding connected between the cathode and control electrode of said silicon-controlled rectifier, said transformer having its primary winding connected to a control circuit, and a diode rectifier connected to rectify current from said source and deliver to said control circuit rectified sinusoidal voltage pulses, said control circuit comprising

means connected to said diode rectifier for generating a ramp voltage signal from said rectified current, and
a voltage-controlled relaxation oscillator powered by rectified current from said diode rectifier and responsive to said ramp voltage signal for producing a trigger pulse through the primary winding of said control transformer at a time during each cycle of said rectified sinusoidal voltage pulse that is inversely proportional to the amplitude of said ramp voltage signal.

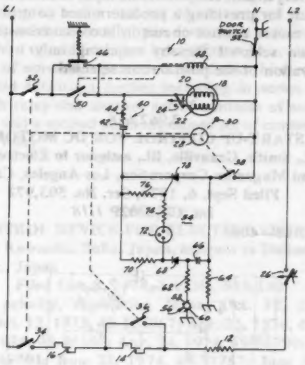
3,962,617
CURRENT LIMITING IMPEDANCE NETWORK FOR DRYER CONTROL

Carl R. Offutt, St. Joseph, and Roque Denis Marcade, Stevensville, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 6, 1975, Ser. No. 539,018
Int. Cl.² H02P 1/04
U.S. Cl. 318—444 **5 Claims**

1. In an automatic clothes dryer of the type having a control circuit wherein an AC motor which is connected to an AC electrical supply is shunted by a controlled conduction device to selectively shunt one half of the AC wave to prevent operation of the motor, and a current limiting means is connected in series circuit with the controlled conduction device and the motor to limit the current through the controlled conduction device during its conductive condition, the improvement wherein:

said current limiting means comprises a resistor and a capacitor connected in series with said resistor, said capacitor having a capacitive reactance which is approximately



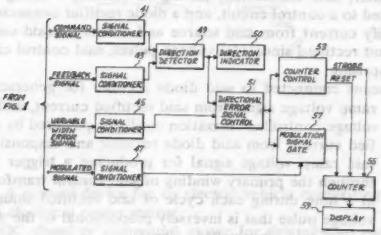
twice the inductive reactance of the motor to provide a capacitive circuit impedance and operation of the circuit with a leading current phase angle.

3,962,618

DIGITAL FOLLOWING ERROR MEASUREMENT SYSTEM

James M. Burton, Seattle, and Jansey D. Tieden, Puyallup, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Aug. 5, 1974, Ser. No. 494,969
Int. Cl.² G05B *13/00*
U.S. Cl. 318—561 **10 Claims**



1. A digital following error measurement system for phase analog servo systems comprising:

error detecting means suitable for connection to a phase analog servo system so as to detect the following error between a commanded position and an actual position and form a bi-level signal having a duty cycle related to said following error;

signal detecting means suitable for connection to said phase analog servo system so as to detect a signal related to the commanded rate of position change an form a pulse chain having a frequency related to said commanded rate of position change;

a signal gate means connected to said error detecting means and to said signal detecting means for passing said pulse chain during the period of time said bi-level signal is in one of its two states; and

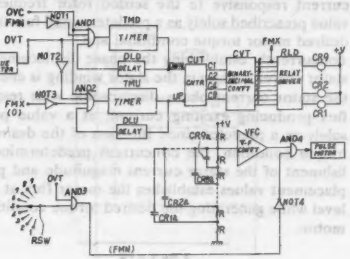
counting means connected to said signal gate for counting the pulses passed by said signal gate.

3,962,619

FEED CONTROL DEVICE

Hideo Nishimura, Kariya, and Tamotsu Ishigaki, Chiryu, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Japan

Filed Oct. 9, 1974, Ser. No. 513,383
Claims priority, application Japan, Dec. 11, 1973, 48-138420
Int. Cl.² G05B *19/24*
U.S. Cl. 318—571 **5 Claims**



1. A feed control device for controlling the feed speed of a tool relative to a workpiece to be machined comprising:

a feed motor for moving said tool relative to said workpiece;

a load detector for generating an output signal in response to a load applied to said tool;

a delay circuit;

an AND circuit for receiving said output signal from said load detector and an output signal from said delay circuit;

a timer for receiving an output signal from said AND circuit, said delay circuit receiving an output signal from said timer;

a plurality of relays;

means responsive to said timer to selectively energize said plurality of relays to change an input voltage; and

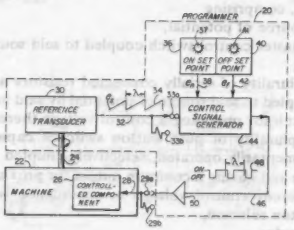
a voltage-to-frequency converter for receiving said input voltage responsive to energization of said relays to thereby rotate said feed motor.

3,962,620

SWITCHING APPARATUS

Warren E. Dion, Bristol, Conn., assignor to The Arthur G. Russell Company, Incorporated, Bristol, Conn.

Filed June 3, 1974, Ser. No. 475,648
Int. Cl.² G05B *11/28*
U.S. Cl. 318—599 **9 Claims**



1. A switching apparatus for producing an ON and OFF valued control signal which switches from one value to the other at adjustable selected points in the variation range of a given reference variable, said switching apparatus comprising:

a reference transducer having said reference variable as an input thereto and operable to convert said reference variable to a reference signal the magnitude of which reference signal

corresponds to the magnitude of said reference variable, an ON set-point device for producing an ON set-point signal having a selectively variable magnitude, an OFF set-point device for producing an OFF set-point signal having a selectively variable magnitude which may be either higher or lower than the magnitude of said ON set-point signal, and a control signal generating means responsive to said reference signal, to said ON set-point signal and to said OFF set-point signal for generating an ON and OFF valued control signal which, as said reference signal increases in magnitude and regardless of whether said ON set-point signal is of a higher or lower magnitude than said OFF set-point signal, switches from its OFF to its ON value when said reference signal reaches comparison with said ON set-point signal and which switches from its ON to its OFF value when said reference signal reaches comparison with said OFF set-point signal.

3,962,621

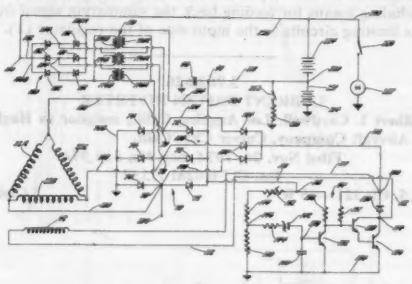
DUAL BATTERY CHARGING GENERATOR SYSTEM

Louis J. Raver, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 406,701, Oct. 15, 1973, Pat. No. 3,863,127. This application Jan. 16, 1975, Ser. No. 541,624

Int. Cl.² H02J 7/14

U.S. Cl. 320—15 **2 Claims**



1. An electrical system associated with an internal combustion engine comprising, a load battery having a predetermined voltage rating, a second auxiliary battery of like voltage rating, first, second and third terminals, means connecting said load battery between said first and second terminals, means connecting said auxiliary battery between said second and third terminals, a cranking motor circuit connected across said first and third terminals, an electrical load circuit connected across said first and second terminals, a polyphase alternating current generator having a polyphase output winding and a field winding, a polyphase rectifier having A.C. input terminals and two direct voltage output terminals, means connecting said input terminals of said polyphase rectifier to said output winding, said polyphase rectifier operable to rectify the polyphase output voltage generated in said output winding into a direct voltage appearing across the direct voltage output terminals of said polyphase rectifier, means connecting said two direct voltage output terminals of said polyphase rectifier respectively to said first and second terminals, a voltage regulator connected to sense the voltage across said load battery and across said direct voltage output terminals of said polyphase rectifier for controlling the energization of said field winding to thereby maintain the voltage across said load battery at a desired regulated value, an isolation transformer having primary and secondary windings, means connecting said primary winding of said isolation transformer to said output winding, a second rectifier having input terminals and two output terminals, means connecting said secondary winding of said isolation transformer to said input terminals of said second rectifier, means connecting said two ouutput terminals of said second rectifier to said second and third terminals, the turns ratio of said isolation transformer being such as to produce an open circuit average voltage at the output of said second rectifier substantially equal to 0.97 of the open circuit average voltage at the output of said polyphase rectifier.

3,962,622

HIGH-VOLTAGE GENERATOR FOR AN X-RAY DIAGNOSTIC APPARATUS

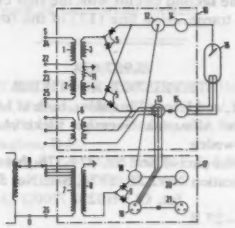
Kurt Franke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Apr. 24, 1975, Ser. No. 571,392

Claims priority, application Germany, May 16, 1974, 2423929

Int. Cl.² H05G 1/12

U.S. Cl. 321—8 R **6 Claims**



1. In a high-voltage generator for an X-ray diagnostic apparatus including a first oil-filled vessel; a primary winding and a secondary winding formed of two series-connected winding portions with a grounded connecting point of said high-voltage transformer, high-voltage rectifiers forming a rectifier bridge; and a heating filament transformer, all being located within said vessel, the junctions for said rectifier bridge, primary winding and heating filament transformer all leading exteriorly of said vessel, the improvement comprising: said primary winding including two winding portions having the junctions thereof conducted outwardly of said vessel to facilitate separate power supply to each said winding portion; a second oil-filled vessel; a second high-voltage transformer in said second vessel having a primary winding corresponding to said primary winding portions of said first high-voltage transformer and a secondary winding corresponding to the secondary winding portions of the latter, said secondary winding having one end connected to ground; and rectifiers connected to the other end of said secondary winding for supplementing the rectifier bridge for rectification of multiphase current, the outlets of the rectifiers and the junctions of the primary winding in said second vessel being conducted exteriorly thereof.

3,962,623

DIRECT CURRENT TRANSMISSION WITH TWO PARALLEL CIRCUITS

Ake Ekstrom, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 21, 1974, Ser. No. 526,067

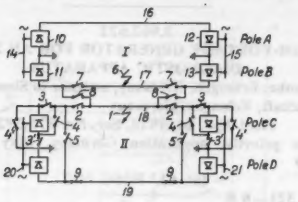
Claims priority, application Sweden, Dec. 21, 1973, 7317337

Int. Cl.² H02M 7/00

U.S. Cl. 321—27 R **1 Claim**

1. Direct current transmission comprising first and second separate parallel transmission circuits (I and II) each comprising convertors, at least the second of the transmission circuits being bipolar, pole reversing means (3, 3', 4, 4') for the convertors in at least one pole (C) of the second transmission circuit (II), transmission lines (16, 17, 18, 19) connecting the poles of each of the transmission circuits in parallel, means (2) for disconnecting a first of the transmission lines (18) of the second transmission circuit from the circuit, means (7) for disconnecting one of the transmission lines (17) of the first

transmission circuit from the circuit, reversing switches (5) for connecting at least two of the poles of the second transmission circuit through the second transmission line (19) thereof,



and means (8) for connecting the disconnected transmission line (18) of the second circuit with the first circuit across the disconnected transmission line (17) of the first circuit.

3,962,624

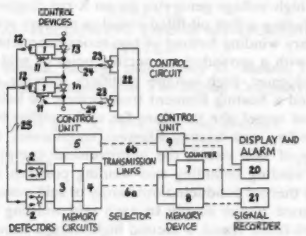
THYRISTOR RECTIFIER

Bernt Ostlund, and Georg Lindblom, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation-in-part of Ser. No. 374,378, June 28, 1973. This application Nov. 21, 1974, Ser. No. 526,068

Int. Cl.² H02M 7/00

U.S. Cl. 321—27 R **5 Claims**



1. A thyristor rectifier for a static converter comprising a plurality of thyristors (13-1n) each provided with a control device (1), a control circuit (22) for the entire rectifier operatively connected with said control devices, detectors (2) and means (12) responsive to the voltage over each thyristor to emit an indicating pulse to said detectors when the voltage over a thyristor amounts to a certain value, a sensing member comprising a selector (4) for recording the indicating pulses emitted through the detectors, one after the other at a certain frequency, a counter (7,20), means to transmit the pulses from the selector to the counter, and control units (5,9) to control and synchronize the selector and the counter in relation to each other.

3,962,625

CONVERTOR STATION WITH PARALLEL-CONNECTED STATIC CONVERTORS

Lars-Erik Juhlin, and Gote Liss, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

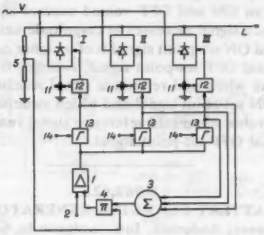
Filed June 19, 1974, Ser. No. 480,930

Claims priority, application Sweden, June 26, 1973, 7308925

Int. Cl.² H02M 7/00

U.S. Cl. 321—27 R **1 Claim**

1. Convertor station for connection of a high-voltage DC line (L) and an AC network (V), which station comprises a plurality of static convertors (I-III) parallel-connected on the DC and AC sides, and a regulator (1) for setting a predetermined transmission magnitude between the DC and AC sides of the station, each static convertor having a separate regulating circuit (12) connected to said regulator (1) for the station, each regulating circuit (12) at the input side being provided with a limiting circuit (13), the input sides of the limiting circuits being parallel-connected and connected to the output



side of the regulator (1), the output sides of the limiting circuits each being connected to one of the regulating circuits (12) of the static convertor, a common summation device (3) connected to the output sides of the limiting circuits, and including means for feeding back the summation signal from the limiting circuits to the input side of the regulator (1).

3,962,626

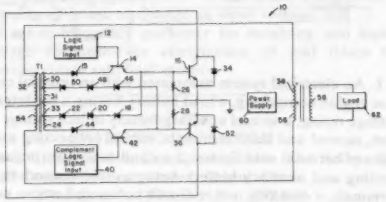
CURRENT DRIVEN INVERTER

Gilbert I. Cardwell, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 26, 1974, Ser. No. 519,974

Int. Cl.² H02M 7/537

U.S. Cl. 321—45 R **3 Claims**



1. A current inverter utilizing current feedback to provide a more efficient inverter system and a feedback loop to remove base current from the output switching transistors of said inverter to provide faster switching comprising:

a first and second output transistor for providing power from a source to a load whenever one of said output transistors are conducting;

a logic signal input;

a complementary logic signal input;

a first and second drive transistor, said first drive transistor causes current to flow into the base of said first output transistor when a high binary signal is delivered by said logic signal input, and said second drive transistor causes current to flow into the base of said second output transistor when a high binary signal is delivered from said complementary logic signal input;

said logic signal input provides a binary level signal to said first drive transistor to forward bias said transistor;

said complementary logic signal input provides the inverse of said logic signal input's binary level signal to said second drive transistor;

a current feedback transformer having a plurality of windings for providing regenerative feedback current to drive

the bases of said output transistors through said drive transistors until said output transistors are saturated;

first feedback means for removing base current from the base-emitter region of said first output transistor to rapidly turn off said transistor;

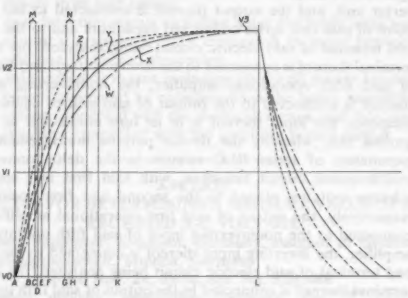
second feedback means for removing base current from the base-emitter region of said second output transistor to rapidly turn off said transistor.

3,962,627

ELECTRONIC APPARATUS FOR TESTING MOVING COINS EMPLOYING SUCCESSIVE TIME SIGNIFICANT SENSINGS OF THE EFFECTS OF PROXIMITY OF A COIN UNDER TEST TO INDUCTIVE IMPEDANCE ELEMENTS UPON THE EFFECTIVE IMPEDANCES THEREOF

James F. Ptacek, Kansas City, Mo., and Leon J. Shaneyfelt, Lenexa, Kans., assignors to The Vendo Company, Kansas City, Mo.

Filed Dec. 20, 1974, Ser. No. 535,021
Int. Cl.² G01R 33/12
U.S. Cl. 324—34 R 12 Claims



1. In apparatus for testing metallic objects such as coins:

at least a pair of stations at which said objects may be tested;

means for causing continuous movement of an object to be tested along a predetermined path successively toward, through and away from each of said stations;

electrical impedance means for and disposed adjacent each of said stations respectively,

each of said impedance means having a different normal electrical impedance,

the effective electrical impedance of each of said impedance means being altered from said normal impedance thereof when a metallic object is at the corresponding station;

electrical circuit means for and coupled with each of said impedance means respectively for providing an electrical output when said circuit means is energized;

means for and coupled with each of said circuit means respectively effective when activated for energizing the corresponding circuit means and impedance means with direct current electrical power,

each of said circuit means having a different time constant of delay in reaching operational equilibrium after commencement of energization thereof materially dependent upon the effective electrical impedance of the corresponding impedance means,

said output of each of said circuit means being a direct current voltage of level which varies as a function of both said time constant of delay and the period of time that has elapsed following commencement of energization of said circuit means;

sensing means for and coupled with each of said circuit means respectively for detecting when the voltage level of said output of said circuit means attains a predetermined level;

control means, including means for activating each of said energizing means when an object to be tested is at the corresponding station, and means for measuring the lapse of time following commencement of energization of each of said circuit means; and

testing means for and coupled with each of said sensing means respectively and with said time measuring means for determining whether or not the voltage level of said output for each of said circuit means is detected to have attained said respective predetermined level thereof during a testing interval occurring a predetermined period of time after commencement of energization of the corresponding circuit means,

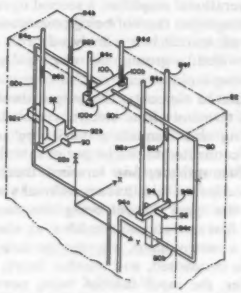
the combinations of said predetermined level of voltage output and said predetermined period of time being different for each of said circuit means.

3,962,628

ADJUSTABLE MAGNETIC GRADIOMETER

Charles R. Rein, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 14, 1975, Ser. No. 568,074
Int. Cl.² G01R 33/02
U.S. Cl. 324—43 G 13 Claims



1. A magnetic field gradiometer of the character described, comprising:

first and second substantially planar wire loops, each of said loops being characterized by first, second, and third areas as viewed along first, second, and third mutually orthogonal axes;

support means, in supporting relation to said loops, for holding said loops in predetermined spaced relation to one another;

positioning means, mounted on said support means, for positioning at least one limb portion of one of said loops relative to the remainder of said one loop so as to alter one of said areas thereof;

instrument means, electrically coupled to said loops, for providing an output representative of relative effects of ambient magnetic field conditions on said loops; and

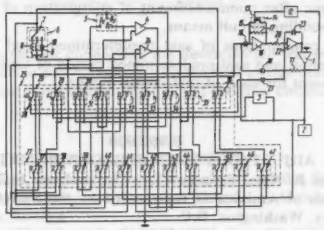
said positioning means comprising at least one positioning element movably mounted on said support means and engaging said one limb portion, and shaft means, rotatably mounted with respect to said support means and coupled with said positioning element, for moving said positioning element and said one limb portion engaged thereby.

3,962,629

DEVICE FOR MEASUREMENT OF PARAMETERS OF COMPOUND ELECTRIC CIRCUIT ELEMENTS

Alexandr Ivanovich Martyashin, ulitsa Kirova, 69, kv. 59; Andrei Elizarovich Morozov, ulitsa Uritskogo, 44/10, kv. 62; Ljudmila Vladimirovna Orlova, ulitsa Popova, 2, kv. 75, and Viktor Mikhailovich Shlyandin, ulitsa Lermontova, 12, kv. 17, all of Penza, U.S.S.R.

Filed May 15, 1975, Ser. No. 577,747
Int. Cl.[2] G01R 27/00
U.S. Cl. 324—57 R 1 Claim



1. A device for measurement of parameters of compound electric circuits, comprising: a first operational amplifier; an inverter unit, the input thereof being connected to the output of said first operational amplifier; a second operational amplifier, the inverting input thereof being connected to one terminal of an electric circuit being analyzed, with a noninverting input also provided; a ground bus electrically coupled with said noninverting input of said second operational amplifier; a unit of calibrated elements, the output thereof being connected to said terminal of the electric circuit being analyzed; a pulse spacing and frequency measuring unit, the input thereof being connected to the output of said first operational amplifier; a first resistor, one terminal thereof being connected to the output of said first operational amplifier; a pulse shaping unit, the input thereof being also connected to the output of said first operational amplifier; an electronic switch, incorporating a control input, whereto the output of said pulse shaping unit is connected, and another input; a third operational amplifier, the input thereof being connected to said other input of said electronic switch, and the output thereof connected to the output of said electronic switch; a resistor inserted into the feedback circuit of said third operational amplifier; a network of two series-connected capacitors, with one terminal of said network connected to said other input of said electronic switch; a second resistor, one terminal thereof being connected to the output of said electronic switch, and the other terminal thereof being connected to the other terminal of said first resistor and to the other terminal of said network of two series-connected capacitors; a fourth operational amplifier, the input thereof being connected to the other terminal of said second resistor, and the output thereof being connected to the input of said first operational amplifier; a capacitor inserted into the feedback circuit of said fourth operational amplifier; a second capacitor, one terminal thereof being connected to the input of said fourth operational amplifier; a fifth operational amplifier; a switchgear electrically coupling the output of said first operational amplifier, the second and third terminals of said electric circuit being analyzed, the noninverting input and output of said second operational amplifier, the inverting and noninverting inputs of said fifth operational amplifier, the input of said unit of calibrated elements and the mid point of said two series-connected capacitors with the inverting and noninverting inputs and output of said fifth operational amplifier, with the input of said unit of calibrated elements, with the output of said second operational amplifier, with the output of said inverter unit, with the other terminal of said second capacitor with the second and third terminals of said electric circuit being analyzed, with the output of said unit of calibrated elements, with the output of said first operational amplifier a and with said ground bus; two selector switches of said switchgear, whereby, with said selector switches placed to the first position, the output of said first operational amplifier is connected to the other terminal of said second capacitor, the noninverting input of said second operational amplifier is connected to the output of said inverter unit, and the output of said second operational amplifier is connected to the mid point of said two series-connected capacitors and to the input of said unit of calibrated elements, the output thereof is connected to the noninverting input of said fifth operational amplifier, the inverting input and output thereof are connected to the third terminal of said electric circuit being analyzed, the second terminal thereof is connected to said ground bus, whereby the device permits measurement of parameters of parallel RLC circuits in delta-connected multiterminal circuit branches; with said first and second selector switches placed to the first and second positions, respectively, the output of said first operational amplifier is connected to the other terminal of said second capacitor, the noninverting input of said second operational amplifier is connected to the output of said inverter unit, and the output thereof is connected to the mid point of said two series-connected capacitors and to the second terminal of said electric circuit being analyzed, the third terminal thereof is connected to the inverting input and output of said fifth operational amplifier, the noninverting input thereof is connected to the output of said unit of calibrated elements, the input thereof is in its turn connected to said ground bus, whereby the device permits measurement of parameters of series RLC circuits in the delta-connected multiterminal circuit branches; with said first and second selector switches placed to the second and first positions, respectively, the output of said first operational amplifier is connected to the noninverting input of said fifth operational amplifier, the inverting input thereof is connected to the second terminal of said electric circuit being analyzed, the third terminal thereof is connected to the output of said fifth operational amplifier, the noninverting input of said second operational amplifier is connected to said ground bus, the output of said second operational amplifier is connected to the input of said unit of calibrated elements and to the mid point of said two series-connected capacitors, whereby the device permits measurement of parameters of parallel RLC circuits in star-connected multiterminal circuit branches; with both said selector switches placed to the second position, the output of said first operational amplifier is connected to the input of said unit of calibrated elements, the noninverting input of said second operational amplifier is connected to said ground bus, the output of said second operational amplifier is connected to the second terminal of said electric circuit being analyzed, the third terminal thereof is connected to the noninverting input of said fifth operational amplifier, the inverting input thereof is connected to the output of the same operational amplifier, said output thereof is connected to the mid point of said two series-connected capacitors, whereby the device permits measurement of parameters of series RLC circuits in star-connected multiterminal circuit branches.

3,962,630

ELECTRICAL CONTINUITY AND VOLTAGE TESTING DEVICE

Bertram Chaffee, Anaheim, Calif., assignor to Mono-Probe Corporation, Los Angeles, Calif.

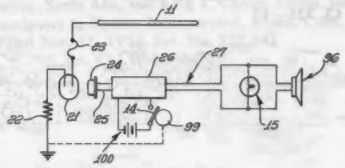
Filed Oct. 31, 1974, Ser. No. 519,747
Int. Cl.[2] G01R 31/02
U.S. Cl. 324—51 6 Claims

1. In a circuit testing device,

a. two probes one of which is sized for insertion into a single electrical socket receptacle to test for the presence of voltage, and both of which are applicable to spaced conductive elements to test for electrical continuity therebe-

tween externally of said device, there being means connecting said probes in series for said continuity test,

b. detection means operatively connected with said probes and including indicator means to indicate the presence or absence of voltage when said one probe is inserted into said socket single receptacle, and to indicate the presence or absence of electrical continuity when said two probes are applied to said spaced conductive elements, there being a casing carrying said detection means and sized to



be hand carried, said one probe projecting relatively rigidly from said casing,

c. said detection means including a gas discharge lamp and electrical resistance, both connected in series between said one probe and the casing,

d. said indicator means including photocell means located to be illuminated by radiation from the lamp, amplifier means connected with the photocell means, and indicator structure connected with the amplifier means output.

3,962,631

CIRCUIT FOR DETERMINING A MEASURE VALUE OF A RECTIFIED A-C VOLTAGE

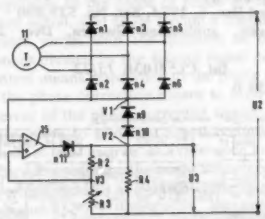
Herbert Poppinger, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 29, 1974, Ser. No. 528,488

Claims priority, application Germany, Dec. 5, 1973, 2360651

Int. Cl.² G01R 19/22; H02M 7/00

U.S. Cl. 324—119 **5 Claims**



1. A circuit for determining the measured value of a rectifier a-c voltage utilizing at least once compensation diode for compensating the diode threshold values in the rectifier, the compensation diode connected in the series with the rectifier, comprising:

a. at least one compensation diode connected in series with the rectifier with the same polarity as the rectifier diodes;

b. a compensation resistor in series with said compensation diode;

c. a voltage divider comprising two resistors in parallel with said compensation resistor; and

d. an operational amplifier having its inverting input coupled to the junction between the rectifier and the compensation diode, its noninverting input coupled to the center tap of said voltage divider and its output coupled between the compensation diode and the compensation resistor.

3,962,632

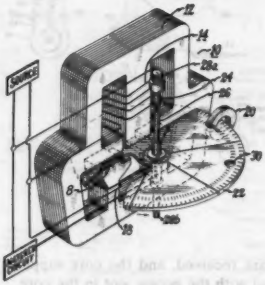
ROTATING DISC EXCESS CONSUMPTION WATTHOUR METER WITH RESTRAINING MEANS MOVABLY MOUNTED ON THE DISC

Samuel G. Hardy, and Joseph L. Peterson, both of Durham, N.H., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 22, 1975, Ser. No. 543,284

Int. Cl.² G01R 11/14, 11/10

U.S. Cl. 324—137 **5 Claims**



4. An excess consumption watthour meter rotor comprising an axial shaft, a conductive disc mounted at its center on said shaft, a disc rotation restraining means for interacting with a magnetic field generated by the meter's damping magnet to stop the disc from turning when the rate of energy consumption in the meter circuit is below a predetermined rate comprising a body of mildly magnetic material movably mounted on said disc, and manual adjustment means for selectively varying the radial distance of said body from the center of the disc thereby to provide a maximum threshold adjustment for the restraining means by moving said body to its radial outermost position.

3,962,633

LONG-SCALE METER MOVEMENT HAVING A ONE-PIECE OUTER POLE AND RETURN RING, AND A DEMOUNTABLE SUBASSEMBLY THEREIN COMPRISING MAGNET, CENTRAL CORE, MOVING COIL AND SUPPORT FRAME

Francis R. Nadeau, Penacook, N.H., assignor to Hoyt Electrical Instrument Works, Inc., Penacook, N.H.

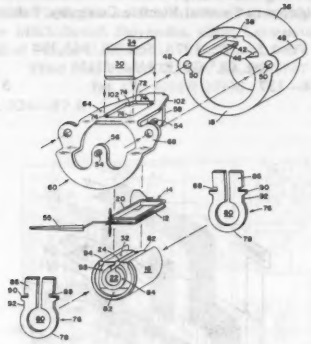
Filed Jan. 20, 1975, Ser. No. 542,437

Int. Cl.² G01R 1/20, 1/02

U.S. Cl. 324—150 **7 Claims**

1. A long-scale meter movement of the moving coil type in which one leg of the coil operates within an annular magnetic gap between concentric pole faces and another leg of the coil extends through a central passage in the inner core piece, comprising a block magnet, an outer ring member having an outer pole piece and a return ring portion in a unitary generally circular configuration, the return ring portion having an inner surface in contact with one pole of the magnet, a central core having a central passage, an access slot, and a surface in contact with the other pole of the magnet, a one-piece frame having front and rear supports for the coil and connecting portions extending through the return ring region of the outer ring member alongside the magnet, a pair of core supports extending through the frame in interlocking relation therewith at the front and rear of the magnet, the portions of the core supports extending through the frame having notches in their side margins which interlock with portions of the frame close to the magnet, the core ends having circular shoulders coaxial

with the axis of said central passage, the lower ends of the core supports having circular apertures within which the circular



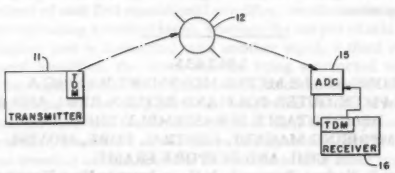
shoulders are received, and the core supports having access slots aligned with the access slot in the core.

3,962,634

AUTOMATIC DELAY COMPENSATOR

Anthony L. Russo, Lanham, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 6, 1973, Ser. No. 385,938
Int. Cl.² H04B 7/20
U.S. Cl. 325—6 3 Claims



1. A communication system comprising:

means for transmitting a multi-channel time division multiplex signal, wherein said means includes a source for the generation of a synchronization pattern for transmission on one channel of said signal;

a receiver geographically separated from the transmitter;

a signal path connecting said transmitter means and said receiver, the transmission delay over said path being variable with respect to time;

a local pattern generator adjacent to the receiver, which generates a pattern identical to the received pattern;

means for detecting a loss of synchronization by comparing the received pattern and said local pattern to detect a loss of alignment thereof, and

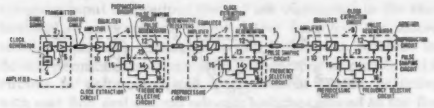
means adjacent to said receiver and within said signal path, and responsive to said detecting means, for maintaining constant the transmission time delay between said transmitter means and said receiver by predictably adding and subtracting increments of delay to realign said received pattern with said locally generated pattern.

3,962,635

TRANSMISSION SYSTEM FOR PULSE SIGNALS OF FIXED CLOCK FREQUENCY USING A FREQUENCY SELECTIVE CIRCUIT IN A CLOCK FREQUENCY RECOVERY CIRCUIT TO AVOID PHASE JITTER

Engel Roza, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 17, 1975, Ser. No. 541,727
Claims priority, application Netherlands, Jan. 21, 1974, 7400760
Int. Cl.² H04B 7/14
U.S. Cl. 325—13 5 Claims



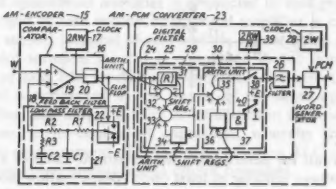
1. A transmission system for pulse signals of fixed clock frequency, comprising a transmitter; a receiver; a transmission path connecting said transmitter to said receiver; and a number of regenerative repeaters located in the transmission path, each of said regenerative repeaters comprising a pulse regenerator, and a clock extraction circuit means including frequency selective circuit means for recovering pulse signals of said fixed clock frequency for for controlling the pulse regenerator, said frequency selective circuit means has a normalized phase transfer function whose absolute value as a function of the frequency is substantially constant from the frequency zero to a first corner frequency, monotonously decreases from the first corner frequency to a second corner frequency, is again substantially constant from the second corner frequency to a third corner frequency and again decreases monotonously for frequencies which are higher than the third corner frequency.

3,962,636

DEVICE FOR CONVERTING AN INCOMING ANALOG SIGNAL INTO AN OUTGOING PCM SIGNAL

Gunnar Erik William Sparrendahl, Handen, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 5, 1974, Ser. No. 529,800
Claims priority, application Sweden, Dec. 21, 1973, 73173742
Int. Cl.² H03K 13/22
U.S. Cl. 325—38 B 6 Claims



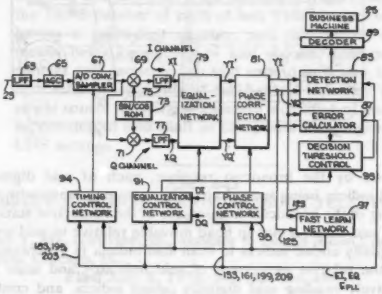
1. Apparatus for converting an incoming analog signal into an outgoing PCM signal comprising: a Δ M-encoder having a comparator circuit with a first analog input adapted to receive the incoming signal, a second analog input and a digital output arranged to supply a delta signal with a clock frequency considerably higher than the upper limit frequency of the incoming signal, a feedback filter for the delta signal connected between said digital output and said second analog input of the comparator circuit, said feedback filter being formed as a low-pass filter comprising a second-order RC-network having two poles localized near the upper limit frequency of the incoming signal; and a digital Δ M-PCM converter operating at a given sampling frequency and having a digital filter means

connected to said digital output of said comparator circuit in said Δ -encoder for generating an average signal from a number of samples of the delta signal at least equal to the ratio between said clock frequency and said sampling frequency, and a PCM word generator means connected in cascade with said digital filter for generating the outgoing PCM signal with a sampling frequency considerably lower than said clock frequency.

3,962,637
ULTRAFAST ADAPTIVE DIGITAL MODEM

David M. Motley, Santa Ana, and King Y. Cheng, Tustin, both of Calif., assignors to Hycom Incorporated, Irvine, Calif.

Filed Nov. 11, 1974, Ser. No. 522,642
Int. Cl.² H03H 7/36
U.S. Cl. 325—42 **21 Claims**



1. An apparatus having first and second channels and adapted to make corrections for the phase error of a first signal comprising:

phase correction means for making a correction in the phase of the first signal to provide a substantially phase corrected signal with the phase corrected signal having first and second components in the first and second channels, respectively;

means for providing a phase error signal representative of the magnitude of the angle of phase error in the phase corrected signal, said angle having a trigonometric function which varies with the quotient of the first signal component divided by the second signal component;

phase control means responsive to the phase error signal to adjust the phase correction means to tend to reduce the phase error of the phase corrected signal; and

means responsive to said first signal component having a magnitude at least as great as a reference level for making a fixed predetermined adjustment in the phase correction means which reduces the phase error of the phase corrected signal.

3,962,638
DATA TRANSMISSION OVER VOICE BANDWIDTH OF FM RADIO CHANNEL

Jack B. Sallis, New Orleans, La., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 5, 1974, Ser. No. 494,595
Int. Cl.² H04B 1/00, 7/00
U.S. Cl. 325—45 **3 Claims**

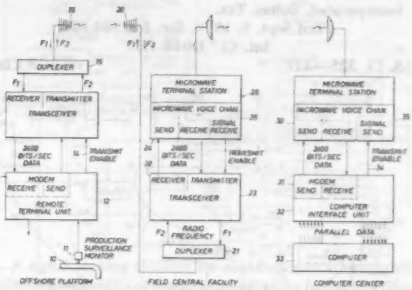
1. A data transmission system located at a remote location for transmitting digital data produced at the remote location to a central station and receiving digital data in the form of modulated tone transmitted from said central station, said system comprising:

a remote terminal unit;

a frequency modulated radio transceiver having both a receiver and transmitter circuit, said transmitter circuit having first circuit means for frequency modulating its transmitted carrier free of pre-emphasis with a relatively flat deviation versus modulating frequency characteristic and minimal phase delay distortion, said first circuit means being coupled to said remote terminal unit;

a power supply, said power supply being permanently coupled to the initial stages of the transmitter circuit including said first circuit means said receiver circuit being coupled to said power supply to receive signals transmitted to said remote location from said central station;

a modem, said modem being coupled to said remote terminal unit and designed to convert the digital data produced at said remote location to a modulated tone, said modem being coupled to said first circuit means of the transmitter whereby said modulated tone modulates the transmitter frequency;



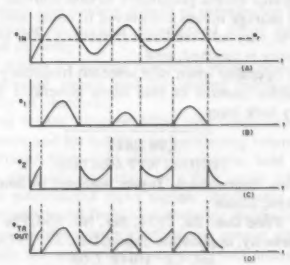
the modem in addition being coupled to the receiver circuit to convert a modulated tone received from said central station into digital command signals, said digital command signals being supplied to said remote terminal unit to control said remote terminal unit; and

a second circuit means, said second circuit means being coupled to said remote terminal unit and disposed to couple said power supply to the final transmitting stages of said transmitter, said remote terminal unit actuating said second circuit means in response to one of said digital command signals.

3,962,639
SYSTEM FOR REDUCING RADIO COMMUNICATION FREQUENCY BANDWIDTH AND INCREASING NUMBER OF CHANNELS AVAILABLE

David W. Kermode, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 11, 1973, Ser. No. 368,567
Int. Cl.² H04B 7/00
U.S. Cl. 325—59 **8 Claims**



1. A system for reducing the bandwidth required to transmit frequency modulated electrical signals, comprising:

a transmitter for transmitting electrical signals, including means for reducing only those amplitudes that are greater than a preselected threshold to a level lower than said threshold, having a plurality of circuit channels, wherein the first of said channels provides the output of the trans-

mitter when the signal amplitude is less than said threshold, and the second of said channels provides the output of the transmitter when the signal amplitude is greater than said threshold level; and

a receiver for receiving said transmitted electrical signals, including means for reconstructing the waveform that existed before said reduction;

such that the bandwidth required to transmit said signals is less than the bandwidth required to transmit the unreduced signals.

3,962,640

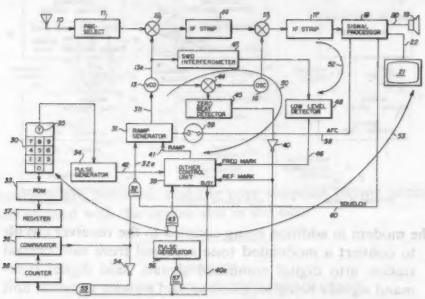
FREQUENCY SELECTION AND CONTROL

Steven J. Bomba, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 9, 1974, Ser. No. 504,626

Int. Cl.² H04B 1/32

U.S. Cl. 325—421 **9 Claims**



1. In a tuner system, the combination comprising:

a. a variable frequency oscillator to be connected in a frequency lock loop,

b. a monotonic ramp voltage generator connected to control the frequency of operation of said oscillator,

c. detector means including an interferometer of an SWD type connected to said oscillator to produce output markers at selected frequencies across a plurality of channel bands over which said oscillator frequency is driven,

d. counter means to count said markers as said ramp generator drives said oscillator frequency away from a reference frequency,

e. storage means having codes stored therein corresponding to the band difference between a reference frequency marker and a target band which includes a selected frequency therein,

f. comparator means responsive to said counter means and to said storage means connected to cause said ramp generator to vary said oscillator frequency until said selected frequency is reached, and

g. means operable when said selected frequency is reached to transfer control of said ramp generator to said frequency lock loop.

3,962,641

TUNING APPARATUS

Hisashi Suwa, Sagamihara, Japan, assignor to Sony Corporation, Tokyo, Japan

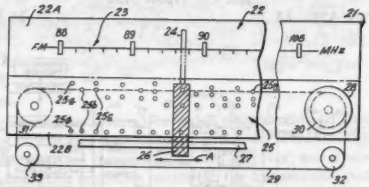
Filed Dec. 20, 1974, Ser. No. 534,796

Claims priority, application Japan, Dec. 27, 1973, 48-4684

Int. Cl.² H04B 1/06

U.S. Cl. 325—455 **9 Claims**

1. In a tuning apparatus for a broadcast receiver having a voltage controlled variable frequency oscillator for generating a local frequency signal corresponding to a selected broadcasting station, and being provided with a phase locked loop including a reference signal oscillator, a variable frequency divider for dividing said local frequency signal with a variable dividing ratio, and comparator means for comparing the frequency and phase of outputs of said reference signal oscillator and said variable frequency divider, respectively, and producing a corresponding control voltage which is applied to said voltage controlled oscillator for determining said local frequency signal in dependence on said dividing ratio of the variable frequency divider; the combination of a dial member having a scale thereon with calibrations representing broadcast frequencies over a predetermined frequency band, an indicator movable relative to said scale to cooperate with the latter for indicating the broadcast frequency to which the tuning apparatus is tuned, an array of spaced apart digitally coded indicia each corresponding to a predetermined one of said broadcasting stations which are adapted to be selectively



received by the broadcast receiver, each of said digitally coded indicia being spaced apart in correspondence with the spacing of the broadcast frequencies of the respective stations along said scale, a pickup head movable relative to said array of digitally coded indicia to scan said indicia in synchronism with the relative movement of said indicator and scale for selectively reading said digitally coded indicia, and control means for determining said dividing ratio of said variable frequency divider in accordance with the digitally coded indicia selectively read by said pickup head.

3,962,642

CHANNEL INDICATOR DEVICE

Nobuo Kitamura, Sagamihara, and Takao Mogi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 14, 1974, Ser. No. 479,557

Claims priority, application Japan, June 18, 1973, 48-71916[U]

Int. Cl.² H04B 1/06

U.S. Cl. 325—455 **3 Claims**

1. A channel indicator device comprising:

A. a rotary shaft connected to a tuner and having a first plurality of angular positions corresponding to channel settings of VHF channels having single-digit numbers, a second plurality of angular positions corresponding to channel settings of VHF channels having two-digit numbers, and a third plurality of angular positions corresponding to UHF chanel settings that have been assigned single-digit numbers;

B. first and second multi-segment numeric indicators;

C. a rotary switch comprising:

1. a first array of contacts equal in number to the total number of said positions,

2. an arm to contact a respective one of said contacts in each of said positions,

3. a first multi-position contact to be contacted by said arm over each of said second plurality of positions,
4. a second multi-position contact to be contacted by said arm over each of said third plurality of positions, and
5 a third multi-position contact connected to one terminal of a power supply and being contacted by said arm in each of said total number of positions; and

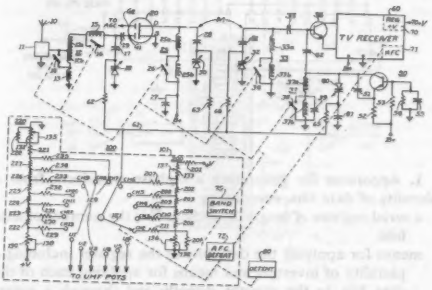
D. matrix circuit means connected to each of said first array of contacts and connected to said first indicator to connect selected segments of said first indicator to said power source by said arm and said third multi-position contact to energize the UNITS number of each of said VHF and UHF channel settings, said matrix circuit means being connected to said first multi-position contact and connected to said second indicator to connect selected segments of said second indicator to said power source by said arm and said third multi-position contact to energize the TENS number of each of said VHF channel settings having a multi-digit number, and said matrix circuit means being connected to said second multi-position contact and connected to said second indicator to connect selected segments of said second indicator to said power source to energize a symbol indicative of the angular position of said shaft as being with the range of said UHF settings.

3,962,643

ABRUPT JUNCTION VARACTOR DIODE TELEVISION TUNER

John Y. Ma, Glenview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 5, 1974, Ser. No. 494,449
Int. Cl.² H04B 1/06
U.S. Cl. 325—464 **21 Claims**



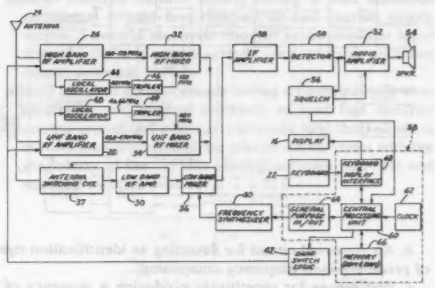
1. A tuner for tuning television signals in a predetermined frequency range having a maximum and minimum frequency comprising: translation and conversion means for receiving television signals and heterodyning the received signals with locally produced oscillatory signals to produce substantially fixed frequency intermediate frequency signals, said translation and conversion means having an input capacitance which limits high frequency signal gain and including a plurality of stages having tunable circuits each with an abrupt junction type variable capacitance diode for tuning thereof; means for imposing tuning voltages on said variable capacitance diodes for simultaneously varying their capacitances to change the tuning of said tunable circuits, said variable capacitance diodes having a capacitance-to-voltage characteristic which is predictable from diode-to-diode and which precludes the need for matching diodes to assure frequency tracking of said tunable circuits with tuning voltage changes on said diodes and being selected to have a capacitance at said maximum frequency that is greater than said input capacitance and a capacitance at said minimum frequency which satisfies the criterion that the gain-bandwidth product of said tuner is substantially constant over said predeterminned frequency band.

3,962,644

CRYSTALLESS SCANNING RADIO RECEIVER CONTROLLED BY PROCESSING MEANS

William Baker, Oak Ridge, Tenn., assignor to Tennelec, Inc., Oak Ridge, Tenn.

Filed May 30, 1975, Ser. No. 582,338
Int. Cl.² H04B 1/26
U.S. Cl. 325—470 **27 Claims**



1. A signal seeking receiver for automatically scanning and monitoring a plurality of predetermined radio frequency channels located in one or more RF bands, and for selecting one channel having a radio frequency signal thereon, said receiver comprising:

an RF section for the RF band and including a RF amplifier and a RF mixer, said RF section providing an intermediate signal when a radio frequency signal is received on a channel;

an IF section operably connected to said RF band mixer and including an IF amplifier for amplifying the intermediate signal received from said RF section;

detector means for producing an audio signal when said intermediate signal is being received;

an audio amplifier connected to said detector means for driving an audio speaker with said audio signal;

means for disabling the audio amplifier when no audio signal is being received and for producing an indicating signal for application to a processing means when an audio signal be being received;

frequency synthesizing means for selectively generating beating signals of predetermined frequencies for application to said RF mixer to select a frequency and provide said intermediate signal, said frequency synthesizing means including a phase-locked-loop and being operable to provide said beating signals of preselected frequencies in response to various preselected input signals being applied thereto;

memory means for storing operating instructions for use by a processing means and for storing information for a plurality of channels;

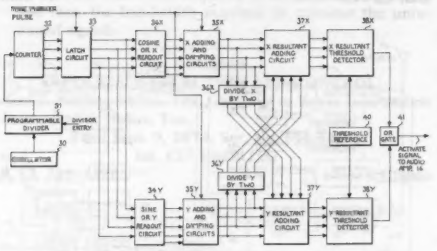
processing means for controlling said frequency synthesizing means and for loading and retrieving information and instructions from said memory means, said processing means normally operating in a first mode wherein said various preselected input signals concerning said channels are retrieved from said memory means and are applied to said frequency synthesizing means whereby said channels are sequentially scanned, said scanning terminating on a specific channel in response to receiving said indicating signal, said processing means resuming the scanning of said channels in response to the termination of said indicating signal; and

means operably connected to said procesing means for entering and loading instructions and frequency information for controlling the operation of said processing means.

3,962,645
TONE FREQUENCY DETECTING CIRCUIT

David A. Stewart, Elnora, N.Y., assignor to General Electric Company, Lynchburg, Va.

Filed Nov. 6, 1974, Ser. No. 521,460
Int. Cl.² H04B 1/16
U.S. Cl. 325—478 11 Claims



4. An improved circuit for detecting an identification signal of predetermined frequency comprising:

a. first means for repetitively producing a sequency of N numbers at a sequence repetition frequency substantially equal to said predetermined frequency of said identification signal;

b. second means responsive to said identification signal for producing signals indicative of the frequency thereof;

c. a vector generator having a first input connected to said first means for said numbers and having a second input connected to said second means for said frequency indicative signals, said vector generator having at least one ouput for producing a vector signal in response to the simultaneous presence of any of said N numbers at said first input and any frequency indicative signal at said second input;

d. each vector signal produced by said vector generator having a characteristic corresponding to the number present at said first input during its simultaneous presence with a frequency indicative signal at said second input;

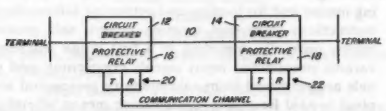
e. third means connected to said vector generator for summing the vector signals produced thereby and producing a resultant signal therefrom;

f. and fourth means connected to said third means for producing a detection signal in response to said resultant signal exceeding a predetermined magnitude.

3,962,646
SQUELCH CIRCUIT FOR A DIGITAL SYSTEM

John A. Tempka, Glenview, Ill., assignor to Motorola, Inc., Chicago, Ill.

Continuation of Ser. No. 287,121, Sept. 7, 1972. This application Nov. 4, 1974, Ser. No. 520,324
Int. Cl.² H04B 1/10, 3/20; H04J 3/06
U.S. Cl. 325—478 8 Claims



6. An improved squelch circuit for a digital system designed to receive transmitted digital messages, including a continuous train of regularly spaced bit timing pulses and excluding a plurality of predetermined unacceptable messages, and operate in response thereto comprising:

a. gate means having a plurality of inputs and at least one output for providing an inhibit signal at the output in response to a predetermined signal on at least one of said inputs;

b. the output of said gate means being connected to said digital system to inhibit the operation of said digital system in response to said inhibit signal;

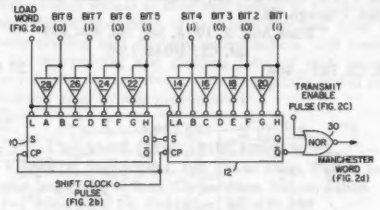
c. logic circuitry connected to a plurality of said inputs and to said digital system for receiving the transmitted digital messages and operating to provide said predetermined signal on one of the plurality of said inputs in response to the reception of a spurious digital signal which corresponds with any of the plurality of predetermined, unacceptable digital messages; and

d. said logic circuitry including further means connected to said digital system for receiving the continuous train of regularly spaced bit timing pulses and providing said predetermined signal on one of the plurality of inputs of said gate means in response to missing bit timing pulses in said continuous train of bit timing pulses.

3,962,647
BIPHASE WAVEFORM GENERATOR USING SHIFT REGISTERS

Jay L. Richman, Montville, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 27, 1974, Ser. No. 509,766
Int. Cl.² H04B 1/00
U.S. Cl. 328—59 7 Claims



1. Apparatus for generating a biphase waveform from a plurality of data bits, comprising:

a serial register of length 2N, where N is the number of data bits;

means for applying the data bits to the register including a plurality of inverters and means for applying each of the data bits to the register directly and through a corresponding inverter;

means for clocking the register at twice a predetermined output data rate, with the register providing an alternating logic level signal for each data bit; and

means for combining the phases of the alternating signals for each data bit to provide the biphase waveform.

3,962,648
FUNCTION GENERATOR

Charles A. Watson, Jr., Bremerhaven, Germany, assignor to E-Systems, Inc., Dallas, Tex.

Filed Jan. 20, 1975, Ser. No. 542,200
Int. Cl.² G06G 7/12
U.S. Cl. 328—142 8 Claims

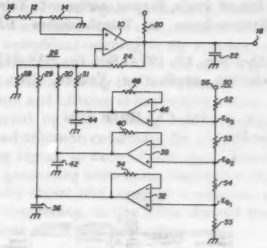
1. A function generator, comprising in combination:

a primary differential amplifier having first and second input terminals and a feedback loop from an output terminal to the second of the input terminals;

a first gain resistor also connected to the second input terminal and to a reference potential;

a plurality of additional gain resistors interconnected to the second of the input terminals;

a voltage ladder network providing control voltages in number equal to the plurality of additional gain resistors; and



a plurality of secondary differential amplifiers equal in number to said additional gain resistors individually connected to one of said resistors and one of the control voltages to vary the gain of said primary differential amplifier.

3,962,649

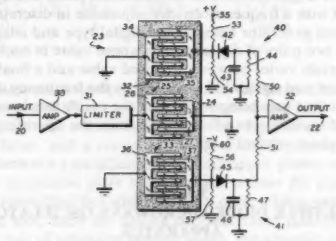
SURFACE WAVE FREQUENCY DISCRIMINATOR

Martin Fischman, and Edward I. Zmuda, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Continuation of Ser. No. 417,036, Nov. 19, 1973, abandoned. This application Jan. 6, 1975, Ser. No. 538,557

Int. Cl.[2] H03D 3/16

U.S. Cl. 329—103 **13 Claims**



1. A frequency discriminator including a piezoelectric substrate having an input transducer and first and second output transducers disposed thereon, and detecting means connected to said output transducers, the improvement comprising limiting means connected to said detecting means for maintaining said detecting means in an inoperative condition in response to spurious signals from said output transducers having signal magnitudes less than a threshold level.

3,962,650

INTEGRATED CIRCUIT AMPLIFIER HAVING CONTROLLED GAIN AND STABLE QUIESCENT OUTPUT VOLTAGE LEVEL

Michael J. Gay, Geneva, Switzerland, assignor to Motorola, Inc., Chicago, Ill.

Continuation of Ser. No. 417,854, Nov. 21, 1973, abandoned. This application Apr. 25, 1975, Ser. No. 571,809

Int. Cl.[2] H03G 3/00

U.S. Cl. 330—29 **16 Claims**

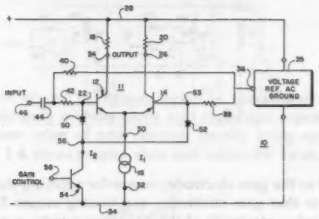
1. An amplifier suitable for manufacture in integrated circuit form having input, control and output terminals and which changes gain in response to a gain control signal developed at the control terminal thereof, including in combination:

current supply means having a first terminal and a second terminal;

first electron control means having a first electrode connected to said first terminal of said current supply means, a control electrode coupled to an amplifier input terminal and a second electrode coupled to an amplifier output terminal;

second electron control means having a first electrode connected to said first terminal of said current supply means, a control electrode coupled to an amplifier input terminal and a second electrode coupled to an amplifier output terminal;

a third electron control means having a first electrode connected to said control electrode of said first electron control means and a second electrode, said third electron control means having an impedance which varies with the magnitude of the current passing between said first and second electrodes thereof;



a fourth electron control means having a first electrode connected to said control electrode of said second electron control means and a second electrode connected to said second electrode of said third electron control means, said fourth electron control means having an impedance which varies with the magnitude of the current conducted between said first and second electrodes thereof;

reference supply means having a first terminal coupled to said first electrodes of said third and fourth electron control means and a second terminal; and

fifth electron control means having a control electrode adapted to receive the gain control signal, a first electrode connected to said second terminal of said reference supply means and to said second terminal of said current supply means, a second electrode connected to said second electrodes of said third and fourth electron control means, said fifth electron control means determining the magnitude of the currents through said third and fourth electron control means in response to the gain control signal to thereby control the gain of the amplifier.

3,962,651

ANALOG A-C STORAGE CIRCUIT EMPLOYING A HIGH GAIN AMPLIFIER

Frank Boyes McCall, Midlothian, Scotland, assignor to Ferranti, Limited, England

Filed Apr. 15, 1975, Ser. No. 568,201

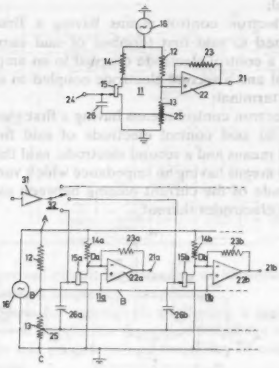
Claims priority, application United Kingdom, Apr. 16, 1974, 16608/74

Int. Cl.[2] H03F 1/14

U.S. Cl. 330—51 **6 Claims**

1. An analog store for producing an alternating output voltage of amplitude dependent on a command signal, which includes a four-arm resistance bridge in which the resistance of one arm is constituted by the drain/source path of a field-effect transistor and hence is variable in dependence on the gate/source voltage, arrangements for energising the bridge across one diagonal by an alternating voltage, means for deriv-

ing the output from the bridge from the other diagonal by way of a high-gain negative-feedback amplifier so as to maintain the voltage between the drain and source terminals of the transistor equal to the voltage across the arm connected to the source terminal despite variations of the resistance of the drain/source path, a capacitor having one electrode connected to the gate electrode, means for applying the command signal to that gate electrode, and biasing means for applying to the other electrode of the capacitor a voltage with respect to the source terminal of the transistor which is equal to half the voltage developed across the said arm connected to that terminal.



3,962,652

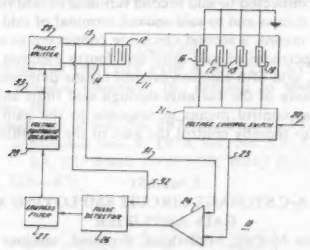
SIMPLIFIED SURFACE ACOUSTIC WAVE SYNTHESIZER

Alvin Zarin, Deal Park, and Francis A. Carbin, Neptune, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 7, 1975, Ser. No. 556,365

Int. Cl.² H03B 3/04, 5/30

U.S. Cl. 331—1 R **8 Claims**



1. A variable frequency oscillator including:

a surface acoustic wave device having an input transducer and at least first and second spaced output transducers;

an amplifier having a first input terminal and an output terminal;

first means for connecting said output terminal of said amplifier to said input terminal of said transducer; and

second means for selectively connecting said first and second spaced output transducers to said first input terminal of said amplifier.

3,962,653

ARRANGEMENT FOR SIMULTANEOUSLY PRODUCING SIGNALS HAVING AN INCREASING FREQUENCY AND SIGNALS HAVING A DECREASING FREQUENCY

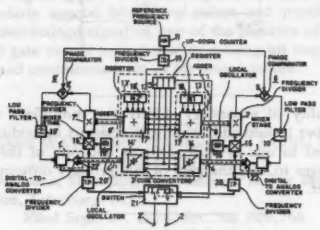
Jean-Claude Basset, Paris, France, assignor to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Dec. 19, 1974, Ser. No. 535,042

Claims priority, application France, Dec. 27, 1973, 73.46529

Int. Cl.² H03B 3/04

U.S. Cl. 331—2 **7 Claims**



1. An arrangement for simultaneously producing in successive and equal time intervals signals having an increasing frequency and signals having a decreasing frequency on a pair of output terminals, the increasing and decreasing frequencies being complementary relative to a certain frequency, said arrangement comprising two voltage-controlled oscillators controlled by control signals derived from a clock-synchronized control generator, characterized in that each of the oscillators is incorporated in an associated phase control loop provided with a frequency divider adjustable in discrete steps, the control generator being of the digital type and adapted to produce two pairs of digital signals whose value in each of the said intervals varies between an initial value and a final value, one pair of said signals being applied to the frequency dividers and the other pair being applied to the oscillators in order to tune said oscillaors to a frequency within the operating range of their phase control loop.

3,962,654

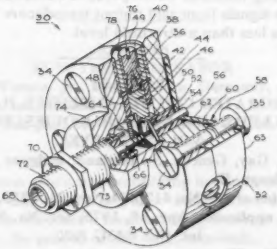
MULTIPLE DIODE MICROWAVE OSCILLATOR APPARATUS

Bill E. Corrons, Montclair, and James F. Barker, Twenty Nine Palms, both of Calif., assignors to General Dynamics Corporation, Pomona, Calif.

Filed Apr. 7, 1975, Ser. No. 565,997

Int. Cl.² H03B 7/14

U.S. Cl. 331—56 **22 Claims**



1. A multiple-diode microwave oscillator including, in combination:

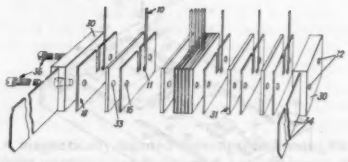
a housing having an axis;
a plurality of avalanche diodes;
a plurality of coaxial transmission lines, each coupled to a corresponding one of said plurality of avalanche diodes to form a plurality of signal generating units, each of said coaxial transmission lines comprising a radially directed, circular cylindrical opening in the housing, an inner conductor centrally spaced within the opening, and a dielectric spacer surrounding the inner conductor and separating it from and affixing it in position within the housing;
means carried by said housing and including an axially positioned common conductor for conductively coupling operating signals to each of said signal generating units;
said signal generating units being disposed within said housing radially about said common conductor; and
means for combining, at the same desired frequency, the power from all of said generating units.

3,962,655

SEMICONDUCTOR LASER STACK

Peter Richard Selway, Harlow; Norman Derek Leggett, Hoddesdon, and Brian Arthur Eales, Stansted, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 28, 1975, Ser. No. 544,739
Claims priority, application United Kingdom, Mar. 21, 1974, 12540/74
Int. Cl.² H01S 3/19
U.S. Cl. 331—94.5 H **6 Claims**



1. A laser stack comprising a plurality of like oriented semiconductor laser dice, each laser die including a light emissive output facet and a fiber optic ribbon having one end secured to said facet, and a set of anodised aluminium plates interleaved between a set of indium coated copper plates, one edge of each aluminium plate having a slot, a laser die positioned in each respective slot with said fibre optic ribbon protruding from the slot, each die having opposite faces positioned between a pair of adjoining copper plates, the plurality of plates and laser dice being compression bonded, the thickness of each laser die in each slot being greater than that of the respective anodised aluminium plate by an amount which extends into the indium coating of the adjoining indium coated copper plates.

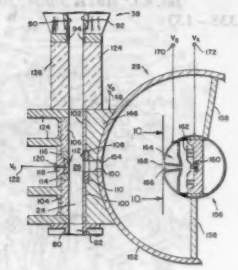
3,962,656

HIGH POWER FLOWING GAS LASER WITH PROFILED ELECTRON BEAM EXCITATION

Eugene R. Peressini, Palos Verdes Peninsula, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 7, 1974, Ser. No. 521,714
Int. Cl.² H01S 3/097, 3/22
U.S. Cl. 331—94.5 PE **7 Claims**

1. In a high power electrically excited flowing gas laser the combination comprising:
means defining a as flow channel;
means for causing a laser gas to flow through said channel at a predetermined subsonic velocity; and
means for introducing a broad area electron beam into an excitation region of said flow channel in a direction perpendicular to the direction of gas flow, said electron beam having a cross-sectional area conforming substantially to that of said excitation region and having a cross-sectional electron desnsity which varies as a function of distance along the direction of gas flow from substantially a minimum value at the upstream and downstream extremities of said excitation region to a maximum value approximately midway along said excitation region, said maximum value of said electron density being approximately 1.6 times greater than said minimum value.

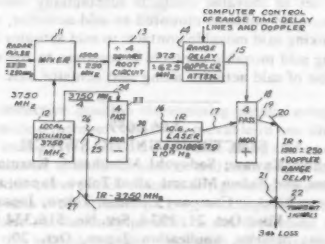


3,962,657

BROADBAND DATA MODULATION SYSTEM

Charles M. Redman, and Ronald W. Moore, both of Las Cruces, N. Mex., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 22, 1974, Ser. No. 516,942
Int. Cl.² H01S 3/00; H04B 9/00; G02F 1/28
U.S. Cl. 332—7.51 **9 Claims**



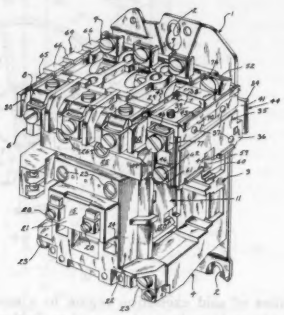
1. A system for transmitting data over a wide band-width comprising an acousto-optical transparent crystal, a high frequency signal source with sidebands adapted to contain such data, means to apply said signal source to said crystal in a manner to form an acoustic grating in the crystal, a source of optical radiation providing a coherent optical beam, means for directing said optical beam through said crystal in a manner to traverse said acoustic grating a plurality of times and then emerge from the crystal which comprises means for correspondingly modulating the beam radiation with a band-width in accordance with the number of passes of the beams through the acoustic grating, and means to demodualte the emerging modulated beam, said crystal being provided with fixed grating means located to guide the optical beam through the acoustic grating.

3,962,658

POWER POLE MODULE FOR CONTACTOR

Donald V. Zunft, Greendale; Siegfried Weidmann, Brown Deer, and Dennis J. Trendel, Mukwonago, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Nov. 18, 1974, Ser. No. 524,670
Int. Cl.² H01H 50/04, 50/62
U.S. Cl. 335—133 12 Claims



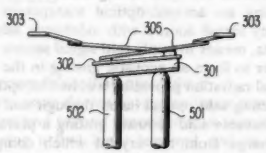
1. A switch, the combination comprising:
a base;
a contact enclosure connected to the base and including a pair of spaced side walls;
a set of stationary contacts disposed within said contact enclosure between said side walls;
an actuator mounted to said base to slide along an actuator axis;
movable contacts mounted to said actuator for movement along said actuator axis between an opened position and a closed position in which they engage said stationary contacts; and
a power pole module mounted alongside said contact enclosure to one of said side walls, said power pole module including a set of stationary contacts substantially similar to the stationary contacts within said contact enclosure, a set of movable contacts substantially similar to the movable contacts mounted to said actuator, and means linking said movable contacts to said actuator for operating said movable contacts in response to the sliding motion of said actuator along said actuator axis.

3,962,659

ELECTROMAGNETIC SWITCH

Ken-ichiro Kawase; Sadayuki Mitsuhashi; Kazutoshi Wakamatsu, and Nobuo Mikami, all of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed Oct. 21, 1974, Ser. No. 516,334
Claims priority, application Japan, Oct. 20, 1973, 48-118321; Dec. 28, 1973, 49-218; Dec. 29, 1973, 49-2004
Int. Cl.² H01H 1/12
U.S. Cl. 335—196 9 Claims



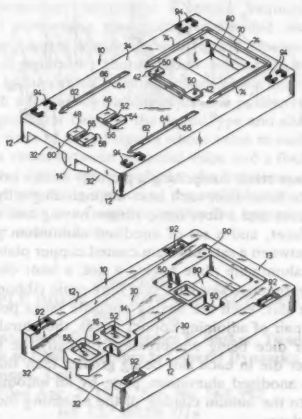
1. An electromagnetic switch including movable and fixed contacts, one of said contacts having a twin projection, said movable contact being suspended by a thin leaf spring capable of readily causing the movable contact to be flexibly displaced in the direction normal to the mating plane, said leaf spring comprising a contact portion having a magnetic body attached thereto, said contact portion and magnetic body in combination having a center of gravity substantially in its geometric center, a pair of side portions adapted for securing said contact portions in a housing of said electromagnetic switch, said side portions being located substantially in the plane of and on opposite sides of said contact portion, and a pair of symmetrically positioned bent arm portions, each of said bent arm portions communicating with a respective one of said side portions and a respective one side of said contact portion, said bent arm portions formed symmetrically with respect to each other about the center of gravity of said combination of contact portion and said magnetic body, whereby said combination of contact portion and said magnetic body is free to move in a direction substantially perpendicular to a plane in which said side arms are secured in response to a force overcoming the restraining force caused by said side portions and said bent arms.

3,962,660

PALLET PAD FOR TRANSFORMERS AND TRANSFORMER AFFIXED THEREON

Don A. Duckett, Waukesha, Wis., assignor to RTE Corporation, Waukesha, Wis.

Filed Nov. 25, 1974, Ser. No. 526,892
Int. Cl.² H02B 5/00; B65D 19/24
U.S. Cl. 336—65 10 Claims



1. A ground level transformer unit comprising:
a transformer and a pallet pad, said pad being formed as one piece from a lightweight cellular plastic material and being affixed to said transformer for providing a shipping pallet and a permanent mounting base,
an opening through said pad to provide access for connecting said transformer to underground electrical cables below said pad and a ridge formed as an integral part of said pad around said opening to matingly engage said transformer to prevent tampering.

8. A transformer pallet pad, said pad comprising:
a pallet pad formed of lightweight cellular plastic material having sufficient strength to support a transformer on the ground,
an opening on the bottom of said pad for receiving the tines of a fork lift truck,
a number of bosses on the upper surface of said pad for securing various size transformers to the pad,

a second opening in said pad for accommodating underground cable leads,

and a ridge formed as an integral part of the upper surface of said pad around the outer periphery of a portion of said second opening to matingly engage the transformer and prevent tampering.

3,962,661

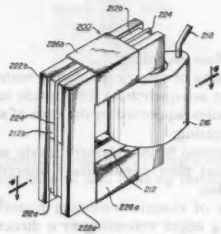
MAGNETICALLY SHUNTED CURRENT TRANSFORMER

Robert Kent Boyd, Florissant, and Allan Walter Lindberg, St. Louis, both of Mo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 22, 1975, Ser. No. 570,510

Int. Cl.² H01F *15/04, 27/24*

U.S. Cl. 336—84 **4 Claims**



1. A magnetically shunted current transformer for use with a current carrying conductor and having a non-distributed secondary winding member, said transformer comprising, in combination:

a magnetic core comprising first and second separable core sections adapted for placement about said conductor wherein the ends of said sections abut one another to form a substantially continuous core and wherein said secondary winding member is carried by said magnetic core and surrounds a portion of at least one of said sections;

means fastening said sections into abutting engagement;

at least one magnetic member having a geometry substantially conforming to said continuous core except at end portions thereof wherein said magnetic number overlaps said core in substantial registry therewith and wherein said end portions of said magnetic member confront said secondary winding; and,

means fastening said member with said continuous magnetic core, wherein leakage magnetic flux generated within said continuous core by said current in said conductor is guided by said magnetic member and substantially coupled with said secondary winding.

3,962,662

METAL WELDING GASKET

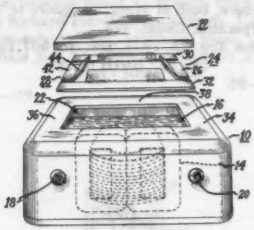
Moreland P. Bennett, Hickory, and Albert M. Hobbs, Jr., Conover, both of N.C., assignors to General Electric Company

Filed Apr. 28, 1975, Ser. No. 572,455

Int. Cl.² H01F *27/02*

U.S. Cl. 336—90 **4 Claims**

1. In an electrical apparatus having a core and coil unit therein immersed in a dielectric fluid and a cover welded to the container, the improvement which comprises a metal gasket member secured between the cover and the container



and in contact with both said cover and said container to prevent weld expulsion from entering the container.

3,962,663

INDUCTIVE POSITION DETERMINING DEVICE

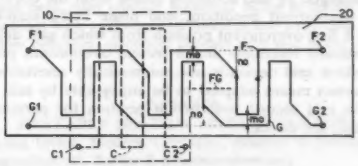
Wim Visser, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 5, 1974, Ser. No. 458,238

Claims priority, application Netherlands, Apr. 13, 1973, 7305172

Int. Cl.² H01F *21/04*

U.S. Cl. 336—129 **9 Claims**



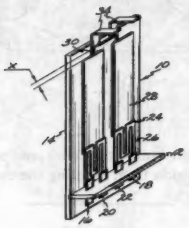
1. An inductive position determining device comprising, first and second members relatively movable in one direction, a signal winding layed out in a first plane along said one direction and secured to the first member and including at least one first meander curve which extends at right angles to said one direction, and two coplanar pick-up windings which lie in a second plane substantially parallel to the first plane and secured to the second member and each having periodically arranged second meander curves with limbs which extend at right angles to said one direction, a position signal being generated in the second meander curves upon correspondence with the first meander curve, characterized in that the periodically arranged second meander curves of a pick-up winding are separated by periodically arranged intervals in each of which at least one second meander curve of the other pick-up winding is accommodated, in that in said one direction groups of corresponding numbers of second meander curves of the two pick-up windings alternate with one another, in that the second meander curves of the two pick-up windings are arranged with equal periods but shifted in phase and correspond to curves of the signal winding, and in that the limbs of the second meander curves are proportioned so that the mean medians of all of said second meander curves coincide, said two pickup windings being the only windings secured to said second member.

3,962,664

CURRENT PROTECTOR

Henry Ty, Attleboro, Mass.; Alfred J. White, North Providence, R.I.; Roger L. Boisvert, Blackstone, and Raymond M. Sears, Attleboro, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 25, 1975, Ser. No. 607,161
Int. Cl.² H01H 61/00
U.S. Cl. 337—86 8 Claims



1. An overcurrent protection device for the protection of electrically operated equipment upon an overcurrent condition comprising mounting means, actuation means mounted in said mounting means, a blade member mounted in said mounting means electrically connected to ground and adapted to be engaged by said actuation means upon the occurrence of an overcurrent condition, said blade being snap-acting having a first overcurrent position from which said device is automatically resettable and a second overcurrent position from which said device is not automatically resettable, and line contact means adapted to be engageable by said blade when in said second overcurrent position for permanently grounding the device.

3,962,665

THERMALLY ACTUATED LIQUID LEVEL SENSOR

Edward Wojcik, Queens Village, and Ricardo Limeres, Staten Island, both of N.Y., assignors to Ideal Corporation, Brooklyn, N.Y.

Filed Feb. 13, 1975, Ser. No. 549,546
Int. Cl.² H01H 61/02
U.S. Cl. 337—102 10 Claims

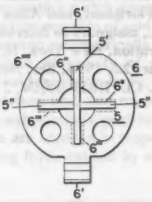
1. A liquid level sensor comprising a heat-conductive wall adapted to be contacted by a body of liquid, an elongate bimetal element protruding from said wall, said element having one end thereof fixed in thermally conductive relation to said wall and having its other end disposed away from said wall, contact means operable by said other end to open or close a signalling circuit, and electrical resistance means disposed along said bimetal element and connectible with a source of electrical current for heating said element, said bimetal element while being heated by said resistance means having either of two distinct postures in which, respectively, its said other end holds said contact means in either circuit opening or circuit closing position, said bimetal element and said heating means constituting means operative at any voltage of said current, absent heat loss from said element as to a body of liquid contacting said wall, to hold said other end substantially on the same line relative to said fixed end so as to maintain one of said postures, and operative during such heat loss to displace said other end laterally into the other of said postures.

3,962,666

SUPPORT PLATES FOR A HELICALLY WOUND FUSIBLE ELEMENT

Edward J. Knapp, Jr., Merrimac, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed Apr. 28, 1975, Ser. No. 571,948
Int. Cl.² H01H 85/04
U.S. Cl. 337—159 5 Claims



1. An electric fuse including
a. a tubular casing of electric insulating material;
b. a pulverulent arc-quenching filler inside said casing;
c. a pair of ferrules supported by the ends of said casing and closing said casing;
d. a helically wound fusible element inside said casing embedded in said filler conductively interconnecting said pair of ferrules;
e. plate means of electric insulating material inside said casing having edges extending in a direction longitudinally thereof supporting said helically wound fusible element; and
f. a pair of disks of sheet metal arranged inside said casing adjacent the ends thereof, each of said pair of disks forming a support for the axially outer ends of said plate means and each of said pair of disks having connector tabs whose ends are interposed between the outer surface of said casing and the inner surface of one of said pair of ferrules, each of said pair of disks being arranged adjacent, parallel to, and in spaced relation from, an end surface of one of said pair of ferrules, and each of said pair of disks being provided with slot means and said plate means projecting through said slot means axially outwardly into a space bounded by said end surface of one of said pair of ferrules and by one of said pair of disks.

3,962,667

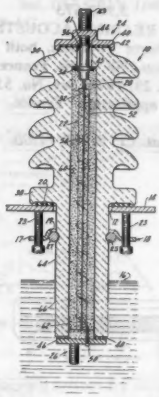
COMBINATION FUSE AND BUSHING

Edwin A. Link, Waukesha, Wis., assignor to RTE Corporation, Waukesha, Wis.

Filed July 26, 1972, Ser. No. 275,178
Int. Cl.² H01H 85/02
U.S. Cl. 337—202 3 Claims

1. A fused high voltage electrical bushing for connecting a high voltage cable through an opening in a casing to an electrical device housed within the casing, said bushing comprising:
a housing formed of a dielectrical material and having an axially extending passage,
an electric terminal sealed to each of said passage,
a fusible element within said passage electrically connected to each of said terminals,
a granular dielectric material completely filling said passage,
a first layer of conductive material on the surface of said passage for reducing voltage stress on said fusible element,
said first layer of conductive material being connected to one of said terminals and extending through the opening in said casing terminating in a spaced relation to the other of said terminals,

and a second layer of conductive material on the outer surface of said housing extending through the opening in the casing, whereby said inner and outer layers of con-



ductive material cooperate to reduce voltage stress at the point of entrance of said bushing through the opening in the casing.

3,962,668

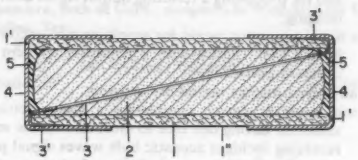
ELECTRIC LOW-VOLTAGE FUSE

Edward J. Knapp, Jr., Merrimac, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed Apr. 22, 1975, Ser. No. 570,366

Int. Cl.² H01H *85/14*

U.S. Cl. 337—228 **3 Claims**



1. An electric fuse including
a. a tubular casing of absorbent cellulosic material;
b. a pulverulent non-fulgurite-forming arc-quenching filler inside said casing;
c. a fusible element of a soft low fusing point metal inside said casing, embedded in said filler and having ends bent around the rims formed by said casing at the ends thereof into engagement with the outer surface of said casing;
d. a pair of terminal caps each mounted under pressure on one of said ends of said casing, reducing the thickness and flattening said ends of said fusible element in engagement with said outer surface of said casing to form connector tabs having a width larger than the width of other portions of said fusible element; and
e. two bodies of a cured synthetic resin inside said casing adjacent said ends thereof, a portion of said resin forming each of said bodies being absorbed by said ends of said casing and thereby hardening and stiffening said ends, and each of said pair of terminal caps being adhesively bonded by said resin to one of said hardened and stiffened ends of said casing.

3,962,669

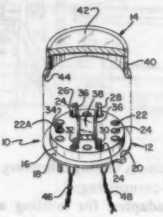
ELECTRICAL CONTACT STRUCTURE FOR SEMICONDUCTOR BODY

Gerald Entine, Newton; Frank C. Wilson, Tewksbury, both of Mass., and Richard Farrell, East Killingly, Conn., assignors to Tyco Laboratories, Inc., Waltham, Mass.

Filed July 24, 1974, Ser. No. 491,330

Int. Cl.² H01C *7/08*

U.S. Cl. 338—19 **15 Claims**



1. A device comprising:
a body of semiconductive material having a pair of opposed surfaces, said surfaces being each provided with a film of electrically conductive material; and
a mounting assembly including a base, at least two resilient spring electrically conductive contact members, and means attached to said contact members and said base for supporting said contact members in spaced relation to said base, said contact members being in spring biased contact with said opposed surfaces and providing stable, slow diffusion, electrical contact with said body.

3,962,670

HEATABLE HOLLOW SEMICONDUCTOR

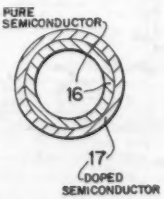
Wolfgang Dietze, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Division of Ser. No. 410,758, Oct. 29, 1973, Pat. No. 3,899,557. This application Dec. 9, 1974, Ser. No. 530,667

Claims priority, application Germany, Oct. 31, 1972, 2253411

Int. Cl.² H01C *13/00*

U.S. Cl. 338—334 **1 Claim**



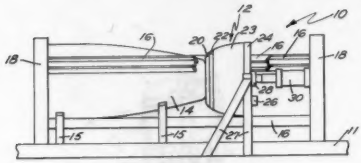
1. A diffusion container for doping semiconductor elements with a dopant comprising:
a gas-impermeable housing having an inner surface composed of pure silicon and an outer surface composed of a doped silicon having a specific electrical resistance of about 10 milliohm centimeters.

3,962,671

CALIBRATION TRANSDUCER

Adam Jilling, Newport, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 18, 1975, Ser. No. 605,565
Int. Cl.² H04R 29/00
U.S. Cl. 340—5 C 3 Claims



1. A structure for use in testing a homing system in the nose section of a torpedo comprising:

enclosing means adapted for holding and enclosing said nose section so that the axis of said nose section lies in a horizontal plane;

a transducer assembly held and enclosed in said enclosing means and adapted to be held in firm abutment to said nose section, said transducer assembly includes a transducer housing enclosing a transducer plate having a plurality of transducer elements arranged in quadrature on said plate and said transducer assembly having an axis coinciding with the perpendicular axis of symmetry of said plate, said axis of said plate and said assembly lying in a horizontal plane;

horizontal force means for exerting force in a horizontal direction adapted for holding said transducer housing in firm abutment with said nose section; and

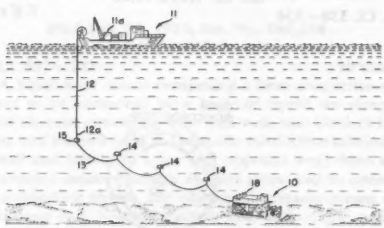
a liquid lubicant disposed on said transducer housing.

3,962,672

TETHERED VEHICLE LOCATION SYSTEM

Robert L. Watts, and Michael D. Juniper, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 16, 1975, Ser. No. 596,329
Int. Cl.² G01S 5/18
U.S. Cl. 340—6 R 10 Claims



1. In a deep ocean system an apparatus for locating a tethered vehicle with respect to the distal end of a cable hanging from a support craft comprising:

means extending from the distal end of the cable for coupling signals between the cable and the vehicle;

means mounted on the distal end of the cable for transmitting an ensonifying signal;

means carried on the vehicle for receiving phase variations of the acoustic signal;

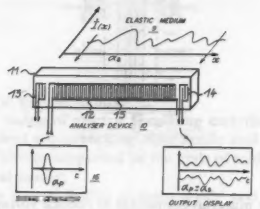
means on the support craft for processing a cycle of the phase variations of the ensonifying signal into range and bearing information.

3,962,673

SYSTEM FOR READING ACOUSTIC IMAGES

Jean Desbois, and Pierre Tournois, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 29, 1974, Ser. No. 518,987
Claims priority, application France, Oct. 31, 1973, 73.38912
Int. Cl.² H04B 11/00
U.S. Cl. 340—15 6 Claims



1. A system for reading acoustic images propagated in an elastic medium, conprising:

a surface acoustic wave analyser device for processing an incident signal by interaction with an excitation signal and for producing a resulting output signal convenient for imaging;

a signal generator means for supplying said excitation signal having short pulses with a pulsation α_p kept at a first constant periodicity;

an output display means for imaging;

said analyzer device comprising a piezoelectric medium substrate having one face to meet said elastic medium for receiving incident acoustic bulk waves signal propagated at a second constant periodicity pulsation α_s and forming on said receiving face an acoustic image defined by a linear acoustic energy density,

and further provided on the opposite face with at least one electro-acoustic transducer means connectable to said output analyser means and at least one interdigital array means of a given length (L) successively arranged on said substrate opposite face perpendicularly to the direction of propagation of a launced elastic surface wave and connectable to said generator means,

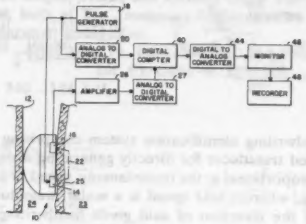
and wherein said incident α_s and excitation α_p signals, simultaneously applied to said array each respectively generate a pattern of mechanical surface strains and the non linear interaction thus produced by the two said patterns gives rise to acoustic surface waves with resulting signal pulsation due to addition or difference of the superimposed pulsations ($\alpha_p \pm \alpha_s$), the duration (T) of said resulting signal ($\alpha_p \pm \alpha_s$) being equal to the ratio of said array length (L) to the propagation velocity (C) of the surface waves over the said substrate, and

the acoustic image being derived from the electrical signal supplied by said transducer means to said output display means with a filtering around its constant resulting pulsation ($\alpha_p \pm \alpha_s$).

3,962,674
ACOUSTIC LOGGING USING ULTRASONIC FREQUENCIES

Eddie P. Howell, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 27, 1975, Ser. No. 553,555
Int. Cl.² G01V *1/40*
U.S. Cl. 340—15.5 AC **12 Claims**



1. An acoustic logging system for determining characteristics of an earth formation comprising:

a. downhole logging means for transmitting an acoustic signal at ultrasonic frequency through the adjacent formation and for receiving said signal,

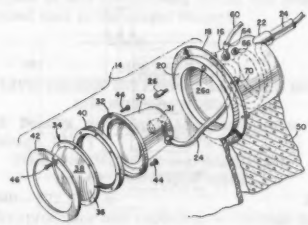
b. means for detecting the initial compressional pulse and the subsequent fluid pulse in said received signal, and

c. means for analyzing said initial compressional pulse and subsequent fluid pulse to determine formation characteristics dependent upon their relative attenuation and transit times.

3,962,675
UNDERWATER FLOODLIGHT ASSEMBLY

William N. Rowley, Palos Verdes Estates, and Gordon F. Ehret, Alhambra, both of Calif., assignors to Weil-McLain Co., Inc., Dallas, Tex.

Filed Mar. 25, 1975, Ser. No. 561,989
Int. Cl.² F21V *31/00*
U.S. Cl. 240—26 **10 Claims**

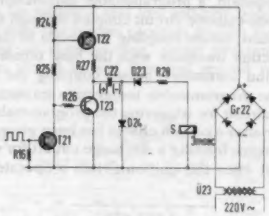


1. An underwater floodlight assembly comprising an open-ended shell adapted to extend in an opening formed in a wall of a reservoir for water, said shell having an outwardly extending integrally formed flange which engages the surface of said wall, a plurality of bosses formed integrally with said flange, said bosses extending in a spaced relationship around said shell and extending into said wall, an open-ended inner housing disposed within said shell and including light bulb receptacle means, and cover means for covering the open ends of said housing and said shell.

3,962,676
CONTROL SYSTEM FOR OHMIC LOADS, PREFERABLY SIGNAL LAMPS IN A ROAD TRAFFIC SYSTEM

Horst Maisel, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed July 23, 1973, Ser. No. 381,903
Claims priority, application Germany, Aug. 4, 1972, 2238521
Int. Cl.² G08G *1/00*
U.S. Cl. 340—41 R **2 Claims**

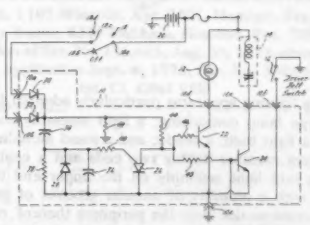


1. A control system for ohmic loads, particularly signal lamps of a traffic regulating system, in response to periodic test pulses supplied under normal operating conditions of the ohmic loads, comprising an evaluation relay having an inherent delay and including an actuating winding, a series circuit comprising a capacitor; a first diode, a unidirectional power supply and a first transistor, operative when said first transistor is conductive to charge said capacitor from said power supply, a second series circuit comprising said capacitor, a second diode, a second transistor, and said actuating winding, operative when said second transistor is conductive to discharge said capacitor through said actuating winding, and means operatively supplying said test pulses to said transistors for effecting alternate conduction of said transistors whereby the charge and discharge of said capacitor is controlled by said test pulses the duration of the charge period being less than the inherent delay of said relay.

3,962,677
SAFETY BELT WARNING SYSTEM

Frederick Otto Richard Miesterfeld, Troy, and Stephen Jay Orris, Allen Park, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 18, 1975, Ser. No. 605,493
Int. Cl.² G08B *21/00*; B60R *21/10*
U.S. Cl. 340—52 E **2 Claims**



1. In a vehicle safety belt warning circuit the combination with the vehicle battery and the vehicle ignition switch of a normally open safety belt switch associated with a safety belt of the vehicle, a warning lamp, a warning buzzer and an electronic control module operatively coupling the vehicle battery, ignition switch, warning lamp, warning buzzer and belt switch, said module comprising a first main control transistor having an emitter, collector, and base and having its emitter-

collector circuit arranged to control conduction through the warning lamp, a second main control transistor having an emitter, collector, and base and arranged to have its emitter-collector circuit controlling conduction through the warning buzzer, means connecting the safety belt switch with the base of the second control transistor, and a timing network connecting the ignition switch with the base terminals of the two transistors, said timing network comprising an input RC charging circuit, diode means operatively coupling said charging circuit with a terminal of the ignition switch which is connected to the battery when the ignition switch is actuated from its off position, a programmable unijunction transistor having its anode-cathode circuit coupled through a resistor to said diode means, means coupling the anode of the programmable unijunction transistor with the base terminals of said first and second transistors, means coupling the anode-gate terminal of the programmable unijunction transistor with the RC charging circuit for triggering the programmable unijunction transistor after a certain charge has been given to said RC circuit, and means forming a discharge circuit for discharging the RC circuit when the ignition switch is operated to its off position.

3,962,678
LIGHTING APPARATUS

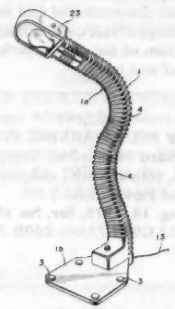
Masayuki Kurokawa, Tokyo, Japan, assignor to Yamagiwa Electric Co. Ltd., Tokyo, Japan

Filed June 10, 1974, Ser. No. 477,742

Claims priority, application Japan, May 1, 1974, 49-50195; May 1, 1974, 49-50196; May 1, 1974, 49-50197

Int. Cl.² F21S 1/12, 3/10

U.S. Cl. 240—81 BD **5 Claims**



1. In a lighting apparatus particularly adapted for use as a stand type lamp comprising: a light assembly comprising a socket; a light bulb; a shade; and a stand including an elongated stem member having two ends and a central portion carrying said light assembly on the upper end thereof and formed with a plurality of annular grooves of generally U-shaped cross-section over the periphery thereof, each groove extending radially with respect to the longitudinal axis of said stem member and all grooves arranged in parallel and successive relation at regular intervals substantially along the whole length of the stem member; and at least one flexible metal bar penetrating through said stem member along the longitudinal axis thereof which holds the stem member in selected positions, the improvement in which said annular grooves become gradually deeper toward at least one end of the stem member from the central portion thereof.

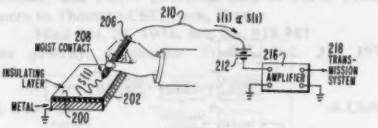
3,962,679
HANDWRITING IDENTIFICATION TECHNIQUE

Rudolf Succo Engelbrecht, Bremgarten, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed June 6, 1974, Ser. No. 476,898

Int. Cl.² G06K 9/00

U.S. Cl. 340—146.3 SY **7 Claims**



1. A handwriting identification system comprising a handwriting speed transducer for directly generating a single analog signal proportional to the instantaneous speed of any given handwriting, wherein said speed is a scalar magnitude independent of the direction of said given handwriting at that instant and which has a quantitative value equal to $(v_x)^2 + (v_y)^2$, where v_x and v_y are respectively the horizontal and vertical velocity vectors, wherein said given handwriting includes a plurality of direction components obliquely inclined with respect to the horizontal, vertical and each other, and wherein said transducer incorporates an electrically insulating film writing surface and a movable element for applying electrostatic charges to said surface with a conductive liquid which does not wet said film to produce said given handwriting on said surface with said movable element and provide a single signal proportional to the instantaneous speed of said element with respect to said surface, whereby said single signal may be employed by itself without processing as a discriminant for identifying handwriting.

3,962,680
COMPARATOR DEVICE

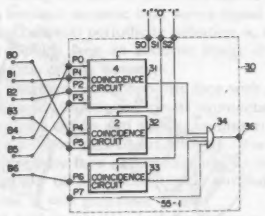
Shigeharu Hirao, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 11, 1975, Ser. No. 557,249

Claims priority, application Japan, Mar. 13, 1974, 49-28100

Int. Cl.³ G06F 7/02

U.S. Cl. 340—146.2 **6 Claims**



1. A comparator device comprising a plurality of coincidence circuits having first input terminals supplied with the corresponding number of bit signals being compared, each having one second input terminal supplied with one of comparison base bit signals, and producing a coincidence detection signal when all the bit signals for each coincidence circuit have the same logical level as that of the comparison base bit signals for that coincidence circuit; and an AND circuit for obtaining the logical product of outputs from the plural coincidence circuits, wherein the number m of the coincidence circuits is so chosen as to satisfy the relationship

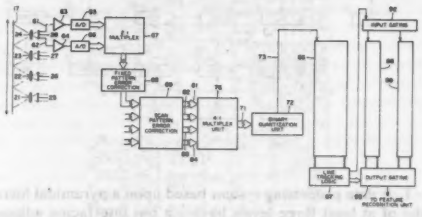
$2^{n-1} \leq x \leq 2^n - 1$

with the total number of bit signals being compared designated as x ($x \geq 3$).

3,962,681
PAGE WIDTH OPTICAL CHARACTER PROCESSING METHOD AND SYSTEM

Stanley C. Requa, Dallas, and Richard Gayle Van Tyne, Richardson, both of Tex., assignors to Recognition Equipment Incorporated, Irving, Tex.

Filed June 19, 1972, Ser. No. 264,014
Int. Cl. G06k 9/12
U.S. Cl. 340—146.3 H **19 Claims**



1. A page width optical scanning system of the type wherein an image of a portion of a complete line of characters on a document is projected onto a plurality of groups of photosensitive means arranged in a single column, the groups to be scanned simultaneously, the photosensitive means extending parallel to character line length and wherein the output signals of all the photosensitive means in the array are periodically scanned and sampled, and wherein said system includes means for correcting scan pattern offset which comprises:

multiplexing means having a plurality of inputs and a single output;

means for delaying for selected periods, scanned data from each of said groups of photosensitive means, respectively, said periods being equal to the time required to compensate for scan pattern offset from each of the groups of photosensitive means; and

means for transferring delayed data from each of said groups of photosensitive means, respectively, to individual inputs of said multiplexing means and produce scan corrected data at the output thereof.

3,962,682
SPLIT LOW ORDER INTERNAL ADDRESS BUS FOR MICROPROCESSOR

Thomas H. Bennett, Scottsdale, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Oct. 30, 1974, Ser. No. 519,136
Int. Cl.² G06F 3/00, 13/00
U.S. Cl. 340—172.5 **22 Claims**

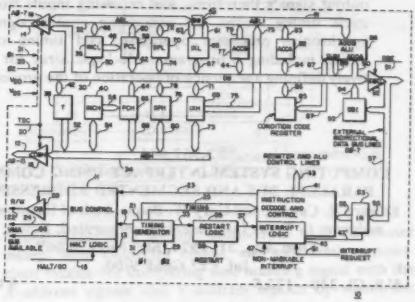
1. A microprocessor unit including an internal data bus N bits wide, N being an interger, coupled to a data output circuit comprising:

parallel internal address bus means including first address bus means N bits wide coupled to first register means for transferring data representative of low order address bits, and second address bus means independent of said first address bus means N bits wide coupled to second register means for transferring data representative of high order address bus bits, said parallel internal bus means being coupled to data output circuit means;

said first register means including first program register means coupled to said first address bus means for storing low order address bits of a current instruction and transferring said low order address bits to said first address bus means if said current instruction is of a first type or to said data bus if said current instruction is of a second type;

said second register means including second program register means coupled between said second address bus means and said data bus for storing high order address bits of said current instruction and transferring said high order address bits to said second address bus if said current instruction is of said first type or to said data bus if said current instruction is of said second type;

counter means coupled to said first and second register means for updating said low and high order address bits in said first and second program register means by incrementing or decrementing, under program control, an address stored in said first and second register means



wherein said counter means includes a first counter coupled between said first address bus means and said data bus and also coupled to said first program register means for updating contents of said program register means;

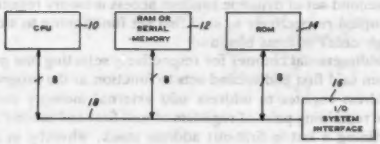
said counter means including a second counter coupled to said address bus means and said second program register means for updating contents of said second program register means independently of said second address means;

said microprocessor unit also including arithmetic logic unit means coupled to said low order address bus and said data bus and control means coupled to said arithmetic logic unit means, said first and second register means, and said counter means for controlling transfers of data thereat.

3,962,683
CPU PROGRAMMABLE CONTROL SYSTEM

Max Brown, 1107 Winrock, Apt. 8401, Houston, Tex. 77027, and Gary Boone, 6319 Oakham, Houston, Tex. 77045

Continuation of Ser. No. 176,665, Aug. 31, 1971, abandoned. This application Sept. 4, 1973, Ser. No. 394,361
Int. Cl. G06f 9/00
U.S. Cl. 340—172.5 **8 Claims**



1. In a synchronous CPU characterized by an operation cycle having a first subcycle during which the CPU may access an external memory and a second subcycle during which the CPU processes data and instructions retrieved from memory, a control system comprising:

a. circuit means for generating said first and second subcycle times, said circuit means including a programmable logic array for selectively defining the time duration of said subcycles,

b. instruction decode means for receiving instructions from said external memory and for producing output signals corresponding to the processor operation required for respective instructions, said decode means comprising a programmable logic array for selectively defining processor operation resulting from selected instructions,

c. cycle timing means operably connected to said circuit means, and having inputs coupled to said instruction decode means to receive output signals therefrom, for controlling the number of processor cycles required for respective instructions. and

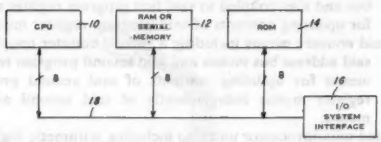
d. timing control means for receiving inputs from said circuit means, and coupled to said decode means to receive output signals therefrom, and receiving inputs from the cycle timing means, for generating control signals to synchronize processor operation, said timing control means including a programmable logic array for selectively defining a sequence of operation of the processor.

3,962,684

COMPUTING SYSTEM INTERFACE USING COMMON PARALLEL BUS AND SEGMENTED ADDRESSING

Edward R. Caudel, and Gary W. Boone, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1971, Ser. No. 176,669
Int. Cl.[2] G06F 9/00
U.S. Cl. 340—172.5 8 Claims



4. In a computing system which includes a central processor unit in combination with a plurality of external memory units wherein the processor includes a control section, a parallel arithmetic logic unit, an instruction register and a random access memory interconnected by a plurality of parallel bus lines common to the processor and external memory units, an internal memory section that includes a last-in-first-out program address stack for addressing the external memory units comprising:

a. a first set of dynamic random access memory registers functioning to store low order address bits,

b. a second set of dynamic random access memory registers coupled respectively to said first set functioning to store high order address bits, and

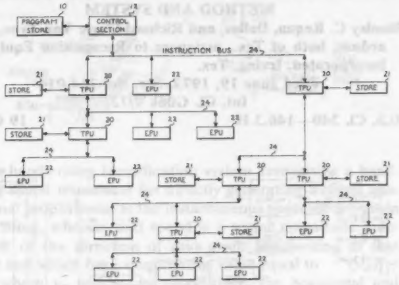
c. a bidirectional counter for respectively selecting one pair from said first and second sets to function as the program address register to address said external memory units, the remaining pairs of registers of said first and second set defining a last-in-first-out address stack, whereby in response to a subroutine call said counter indexes one unit in a first direction to select an adjacent pair of data registers as the new program address, the previous pair of data registers storing the address for a return instruction which is effective to cause said counter to index one unit in the opposite direction.

3,962,685

DATA PROCESSING SYSTEM HAVING PYRAMIDAL HIERARCHY CONTROL FLOW

Albert P. Belle Isle, Pittsfield, Mass., assignor to General Electric Company, Salem, Va.

Filed June 3, 1974, Ser. No. 476,030
Int. Cl.[2] G06F 15/16
U.S. Cl. 340—172.5 22 Claims



1. A data processing system based upon a pyramidal hierarchy of at least three levels having a bus interfacing adjacent levels thereof, comprising:

A. a first, highest level including,

1. a store containing a plurality of addressable locations each capable of retaining an instruction word containing an operation code portion defining an operation to be performed, and

2. a sequence controller for addressing said store to selectively retrieve instruction words therefrom and for placing said words on the bus interfacing the first and second levels;

B. second and third respectively lower levels each including a plurality of processing units connected in parallel to the bus interfacing the respective level to the next higher level,

1. each of said processing units containing recognition means responsive to the operation code portion of the instruction word on the bus interfacing it with the next higher level to accept only those words containing designated operation code portions,

2. each of said processing units being of a one of two types, an execution processing unit or a translator processing unit,

3. each of said second and third levels capable of including execution processing units and translator processing units and each having at least one translator processing unit,

a. each of said execution processing units responsive to an instruction word recognized thereby to perform the operation specified by that instruction word, and

b. each of said translator processing units including means to distinguish between first and second types of instruction words recognized thereby comprising,

i. means responsive to the first of the two types of instruction words for transmitting that instruction word to the next lower interface bus without modification, and

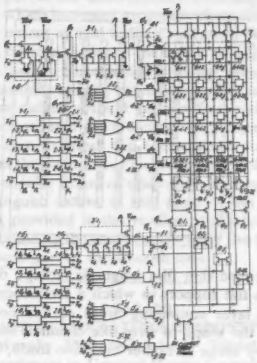
ii. means responsive to the second of the two types of instruction words for initiating an operation by an associated execution processing unit in accordance with a stored group of additional instruction words, including means to address a store means containing said additional instruction words; and

C. addressable store means associated with each of said translator processing units for storing said additional instruction words.

3,962,686
MEMORY CIRCUIT

Shigeki Matsue, and Hajime Shirato, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Continuation of Ser. No. 360,687, May 16, 1973, abandoned. This application Aug. 9, 1974, Ser. No. 496,190
Claims priority, application Japan, May 16, 1972, 47-48876
Int. Cl.[2] G11C *13/00*
U.S. Cl. 340—173 R 17 Claims



1. A memory circuit employing insulated-gate field-effect transistors, said memory circuit comprising a plurality of terminals for receiving a plurality of address signals, a terminal for receiving a single timing signal, a plurality of circuits to be operated in sequence, and means for controlling the commencement of operation of each of said plurality of circuits, said controlling means including a control circuit having an operation time substantially similar to that of one of said plurality of circuits, said control circuit receiving the same input signal as that for said one circuit and producing an output signal that is applied to and effective to initiate the operation of the succeeding one of said plurality of circuits subsequent to said one circuit upon the completion of operation of said one circuit, whereby said plurality of circuits of said memory circuit are operated automatically in a predetermined sequence with said single timing signal.

3,962,687
METHOD OF INSPECTION OF SEMICONDUCTOR MEMORY DEVICE

Yoshikazu Suzumura, Fuchu, and Yoichi Asano, Setagaya; both of Tokyo, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 15, 1974, Ser. No. 514,927
Claims priority, application Japan, Oct. 12, 1973, 48-113896
Int. Cl.[2] G11C *13/00*
U.S. Cl. 340—173 R 2 Claims

1. In a testing apparatus for detecting faults in a semiconductor memory array made up of a plurality of memory cells, each cell being capable of storing a binary bit of information, each cell being addressed by an X-address signal and a Y-address signal, said testing apparatus including:

a. program means for generating a testing signal;

b. X-counter means, controlled by said program means, for generating an X-address signal for the semiconductor memory array to be tested;

c. Y-counter means, controlled by said program means, for generating a Y-address signal for the semiconductor memory array to be tested;

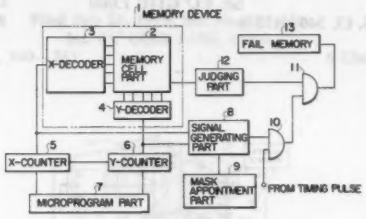
d. judging means, coupled to said semiconductor memory array to be tested, for generating judgment signals representative of the results of the testing of a respective cell within said semiconductor memory array, addressed by said X-counter means and said Y-counter means;

e. memory means, coupled to said judging means, for storing judgement signals representative of the results of the testing of a respective cell; and

f. first gate means connected between said judging means and said memory means, for controllably coupling said judgment signals to said memory means;

the improvement comprising;

g. mask appointment means for generating a masking signal representative of the address of a memory cell known to be defective;



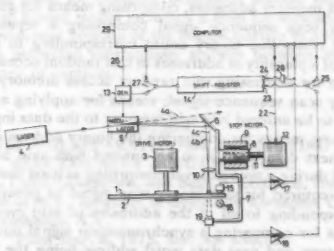
h. signal generating means, coupled to said X-counter means, said Y-counter means, and said mask appointment means, for comparing said masking signal with the X-address signals and Y-address signals by which the memory cells of the semiconductor memory array are addressed during the testing thereof, and for generating a mask signal upon coincidence of the masking signal with said X-address and Y-address signals; and

i. second gate means, coupled between said signal generating means and said first gate means, and receiving a timing pulse, for inhibiting the transmission of said timing pulse to said first gate means, in response to the generation of a mask signal by said signal generating means.

3,962,688
OPTICAL MASS DATA MEMORY

Erik Gerhard Natanael Westerberg, Hastskovagen 7A, S-183 50 Taby, Sweden

Filed Apr. 2, 1975, Ser. No. 564,637
Claims priority, application Sweden, Apr. 16, 1974, 7405076
Int. Cl.[2] G11C *13/04, 11/42*
U.S. Cl. 340—173 LM 8 Claims



1. An optical memory for storing large amounts of information with a great packing density having recording and reading cycles controlled by a computer, there being a laser beam to provide recording and reading of information respectively on and from a memory disk rotating in operation, in response to

acousto-optical modulation of the beam, this modulation providing fine adjustment of the beam in the radial direction of the disk while coarse adjustment of the beam takes place mechanically, characterized by an acousto-optical modulator arranged in the path of the laser beam for both amplitude and frequency modulating the beam, so that it is fine adjusted by deflection, or for providing different intensities, and by a mechanical coarse adjusting unit for stepwise displacement of the beam in the radial direction of the disk.

3,962,689

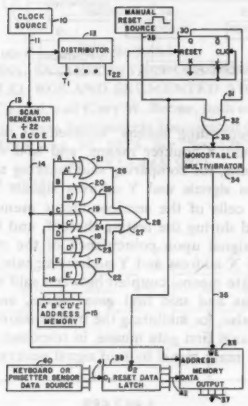
MEMORY CONTROL CIRCUITRY

Raymond D. Brunson, 5404 Brixham Court, Burke, Va. 22015

Filed Nov. 21, 1974, Ser. No. 525,917

Int. Cl.[2] G11C *13/00*

U.S. Cl. 340—173 R 8 Claims



1. A system for controlling read and write functions of a random access memory to continuously read out therefrom in sequential binary order, data words stored in said memory and to selectively enter a next data word into a predetermined one of said memory addresses, comprising means for generating a binary scan sequence signal comprising a repeated clock signal controlled binary count corresponding to successive ones of a plurality of addresses in said random access memory; means for addressing said random access memory with said binary scan sequence signal; means for applying a next data word to be entered into said memory to the data input of said memory; means for comparing the binary address into which said next data word is to be entered with said binary scan signal during a time interval comprising at least that period of time required for said binary scan signal to generate signals corresponding to all of the addresses of said memory; said means for comparing a synchronization signal upon said binary scan and next data word address being the same; and means for applying said synchronization signal to write-enable pulse forming a logic means, in response to which said write-enable pulse forming logic means outputs a write-enable pulse; and said write-enable pulse being applied to said memory to cause said next data word to be written into the then addressed location in said memory.

3,962,690

THIN FILM MAGNETIC STORAGE DEVICE

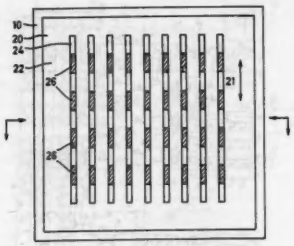
Roland Koenig, Ludwigshafen; Hermann Deichelmann, Schwetzingen, and Herbert Henkler, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Sept. 5, 1974, Ser. No. 503,285

Claims priority, application Germany, Sept. 6, 1973, 2344983

Int. Cl.[2] G11C *19/08*

U.S. Cl. 340—174 ZB 2 Claims



1. An improved thin film magnetic storage device of the type having a flat support to which a ferromagnetic layer is applied, said layer containing areas of low coercive force which are in the shape of strip-like channels and which are surrounded by areas of higher coercive force, and wherein electric conductors extend in planes parallel with said flat support which are adapted for the flow of electrical signal current which establishes the magnetic fields needed to nucleate, propagate, read and erase the magnetic domains in the low coercive force areas, the improvement comprising:

said electric conductors being arranged in two separate planes in a manner such that they intersect said channels perpendicularly, the conductors of one plane at the point of intersection with said channels being situated about the gaps between the conductors of the second plane.

3,962,691

DEVICE FOR THE TRANSMISSION OVER A DISTANCE OF INDICATIONS IN PARTICULAR OF A METER

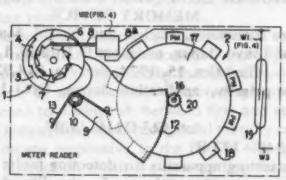
Michel Langenfeld, Vandoeuvre-les-Nancy, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Nov. 27, 1974, Ser. No. 527,784

Claims priority, application France, Nov. 29, 1973, 73.42592; Nov. 4, 1974, 74.36617

Int. Cl.[2] G08C *19/16*

U.S. Cl. 340—203 12 Claims



1. In a device for transmitting over a distance the angular position of rotary elements such as indicator drums of a meter, comprising an exterior connector, a current generating and decoding reading apparatus for making a reading of the angular position of the rotary elements, the reading apparatus being detachably connected in the connector, an encoding unit comprising for each rotary element a stepped cam which has steps in successive equal sectors of the stepped cam and is connected to rotate with the corresponding rotary element,

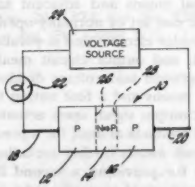
the steps being positioned on radii of the cam which increase progressively from a first of said steps to a last of said steps, a movable follower combined with the cam to be driven by the cam, elastically yieldable means for biasing the follower against the stepped cam, a smooth cam coaxial with the stepped cam, drive means for driving the smooth cam in rotation, the smooth cam having a camming surface cooperative with the follower and capable of maintaining the follower spaced away from the steps of the stepped cam outside periods in which the reading apparatus makes said reading, and a device for detecting movement of the follower; the improvement comprising the following features: the smooth cam has in at least a part of the smooth cam a camming surface which has a radius which increases progressively to shift the follower to the same extent as said radii of said steps between a minimum radius corresponding to the radius of said first step and a maximum radius corresponding to the radius of said last step, a substantially radially extending surface interconnecting the maximum radius part and the minimum radius part of the camming surface, said drive means being capable of causing the smooth cam to effect a predetermined number of rotational steps in the direction of increasing radii of said camming surface, the angular extent of said rotational steps corresponding to the angular extent of said steps of the stepped cam, means being provided in the reading apparatus for counting the steps effected by the smooth cam while the follower cooperates with said part of the smooth cam.

3,962,692

SOLID STATE TEMPERATURE RESPONSIVE SWITCH

Michael P. Murphy, Flint, and John W. Riddel, Fenton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 18, 1974, Ser. No. 524,675
Int. Cl.² G01K 7/22; G08B 21/00; H01L 29/167, 31/10
U.S. Cl. 340—228 R **4 Claims**



1. An electrical circuit that includes a solid state temperature responsive switch device having a thermally dependent P-N junction providing switching action, said circuit comprising:

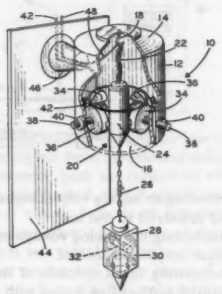
a body of semiconductive material, said body having at least two regions defining an interface therebetween, one of said regions being thermally non-invertible in conductivity type wherein said one region has the same conductivity type regardless of temperature, the other region being thermally invertible in conductivity type at a predetermined temperature, said thermally invertible region being doped with both P-type and N-type selected impurities in appropriate concentrations to produce conductivity type inversion at said predetermined temperature, said N-type impurities having an activation energy of less than about 0.1 electron volt and having a given actual concentration, said P-type impurities having an activation energy at least three times the activation energy of said N-type impurities and an actual concentration at least ten times said given concentration of said N-type impurities, said thermally invertible region having N-type conductivity below said predetermined temperature and P-type conductivity above said predetermined temperature thereby producing a P-N junction at said interface when both of said regions are of opposite conductivity type and not producing a P-N junction when both of said regions are of the same conductivity type, an electrically conductive terminal on each of said outer regions, said terminals being serially connected into a circuit having a direct current voltage source of appropriate polarity and a temperature indicating means, wherein said body blocks current from the voltage source when said P-N junctions are present, yet readily passes current when they are not present and thereby activates said temperature indicating means.

3,962,693

MOTION DETECTION DEVICE INCLUDING A PENDULUM SWITCH

Charles H. M. Schamblin, P.O. Box 1709, Bakersfield, Calif. 93302

Filed July 21, 1975, Ser. No. 597,441
Int. Cl.² G08B 13/08, 17/00
U.S. Cl. 340—261 **6 Claims**



1. A motion detection device comprising:

A. a pair of electrical terminals having a potential difference established therebetween;

B. a multiplicity of pairs of mutually spaced electrical contacts arranged in intersecting planes and commonly connected to one electrical terminal of said pair of electrical terminals;

C. an electrically conductive, first pendulous mass connected with the other terminal of said pair of terminals suspended for pendulous motion between said multiplicity of pairs of contacts and adapted to engage the contacts for thus establishing electrical continuity between the pair of terminals; and

D. a second pendulous mass suspended from said first pendulous mass for damping pendulous motion imparted thereto having means including a level for indicating the instantaneous position of the masses relative to a vertical plane projected substantially midway between at least one pair of contacts.

3,962,694

METHOD AND APPARATUS FOR MONITORING AN ELECTRICALLY ACTUATED TOOL

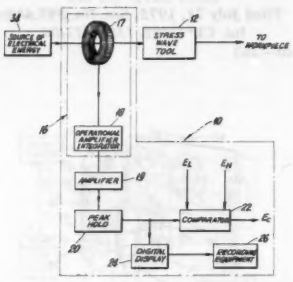
Vincent S. Calia, Greenlawn, and Basil P. Leftheris, Huntington, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Mar. 6, 1975, Ser. No. 556,169
Int. Cl.² G08B 21/00
U.S. Cl. 340—267 R **14 Claims**

1. A method of monitoring the current flowing in the tool circuit of an electrically actuated tool, in which the force output delivered by the tool is proportional to the square of the current delivered to the tool, comprising the steps of:

a. providing an analog voltage signal proportional to the rate of change of the current delivered to the tool;
b. integrating the analog voltage signal resulting from step (a) to provide a voltage signal proportional to the current delivered to the tool;
c. monitoring the amplitude of the integrated voltage signal resulting from step (b) and holding the maximum value thereof;
d. comparing the maximum amplitude of the integrated voltage signal with a reference envelope; and
e. producing an error signal if the maximum amplitude of the integrated voltage signal is outside the range established by the reference envelope.

7. Apparatus for monitoring the current flowing in the tool circuit of an electrically actuated tool, comprising:



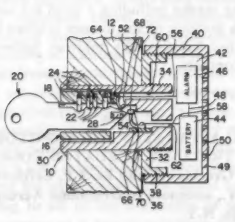
means for providing an analog voltage signal proportional to the current delivered to the tool;
means for monitoring the analog voltage signal and holding the maximum amplitude thereof.
means for comparing the amplitude of the signal held by said monitoring and holding means with reference signals which are proportioned to the highest and lowest allowable force output levels and producing an error signal if the signal held by said monitoring and holding means is outside the range established by the two reference signals; and
means for preventing recycling of the tool in the presence of an error signal.

3,962,695

MAGNETIC KEY LOCK AND ALARM

George Peters, Brooklyn, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed July 3, 1975, Ser. No. 592,828
Int. Cl.² E05B *45/10*
U.S. Cl. 340—274 R **3 Claims**



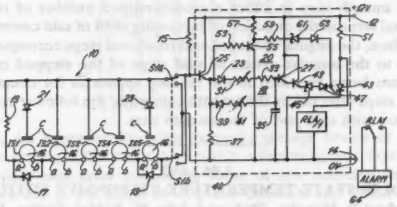
1. A battery operated alarm system responsive to a serrated magnet-bearing key comprising a tumbler assembly having a key slot for cooperation with the serrations of said key, a first switch means carried by said lock for detecting the presence of a key in said key slot, a second switch means including ferromagnetic material for magnetic actuation of said second switch means by said key, a battery holder and an alarm means carried by said lock and means for interconnecting said battery, said alarm and said first and second switch means for said alarm to be energized upon insertion of a non-magnet-bearing key.

3,962,696

PROTECTIVE SYSTEMS

Ashtyn Hereward Smith, Carmarthenshire, Wales, and John Egon Forbat, Hartley Wintney, England, assignors to Inertia Switch Limited, Hartley Wintney, England

Filed June 14, 1973, Ser. No. 369,956
Claims priority, application United Kingdom, June 15, 1972, 28165/72
Int. Cl.² G08B *13/02*
U.S. Cl. 340—276 **22 Claims**



1. A monitoring system comprising terminal means connectible to a potential source, a voltage divider connected between said terminal means and including first and second elements in series, a sensor circuit including at least one set of normally-closed contacts in series with said voltage divider between terminal means and adjacent said second divider element, at least one set of normally-open contacts in series with said first divider element and in parallel with said second divider element, and output circuit means coupled to the sensor circuit between said voltage divider elements and including a timer means and a first output terminal means for providing a first output signal upon actuation of a said set of normally-closed contacts at least for a predetermined period, said output circuit means further including a second output terminal means for providing a second output signal upon actuation of a said set of normally-open contacts, said timer means being adjustable to vary the length of said predetermined period.

3,962,697

LOW LEVEL BIO-TELEMETRY SYSTEM USING C/MOS MULTIPLEXING

Robert Vreeland, San Francisco, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

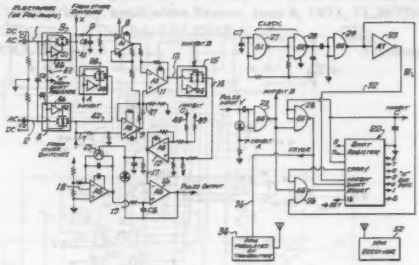
Filed June 16, 1975, Ser. No. 587,172
Int. Cl.² G08C *15/06*
U.S. Cl. 340—183 **11 Claims**

1. A multi-channel biotelemetry system for multiplexing and transmitting individual data samples derived as signal inputs from a plurality of electrode sources, comprising:
a plurality of complimentary-type MOS switching mechanisms receivably-coupled one to each said data samples, said mechanisms being sequentially operated for cumulatively providing an output pulse train formed of said electrode source samples
broadband main amplifying means receivably coupled to said output pulse train,
pulse-position modulating means receivably-coupled to said amplified train for producing a sequence of output pulses

spaced one from another a distance directly proportional to the amplitude of each pulse of said train,

transmitter means coupled to said modulated output,

resetable pulse-generating means for sequentially operating said plurality of switching mechanisms, said means being



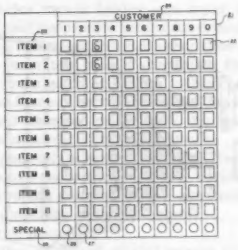
responsively coupled to said modulated pulse train for generating a separate switch-enabling pulse for each successively-received pulse, and

means for synchronizing the resetting of said pulse-generating means after said switching mechanisms have been sequentially enabled.

3,962,698
VISUAL DISPLAY AND REMOTE CONTROL PANEL SYSTEM

Don N. Hunt, West Jordan, and Robert P. Anderson, Salt Lake City, both of Utah, assignors to Don N. Hunt, West Jordan, Utah

Filed Nov. 20, 1974, Ser. No. 525,378
Int. Cl.² G08B 5/36
U.S. Cl. 340—286 **4 Claims**

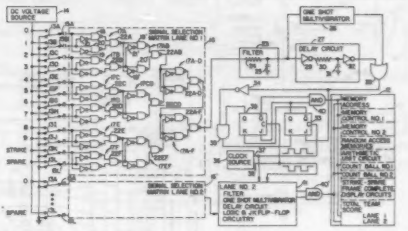


1. An illuminatable display and control panel system including, in combination: a display panel having a matrix of lighting means for giving a visual indication and indicia means for identifying rows and columns of said matrix, said matrix comprising a series of individual, multi-numeral lighting devices; a control panel having plural series of finger-actuated, successively actuatable switch means for successively selecting particular numeral illumination of particular light means of said matrix; memory means for electronically storing information as derived from successive series of switch means selections; and means for strobing said memory means and coupled to said lighting means to provide a continuously visible display of said selections simultaneously.

3,962,699
SWITCH CLOSURE RESPONSIVE LOGIC SIGNAL GENERATION MEANS

Raymond D. Brunson, 5404 Brixham Court, Burke, Va. 22015

Filed July 15, 1974, Ser. No. 488,282
Int. Cl.² A63D 5/04
U.S. Cl. 340—323 B **5 Claims**

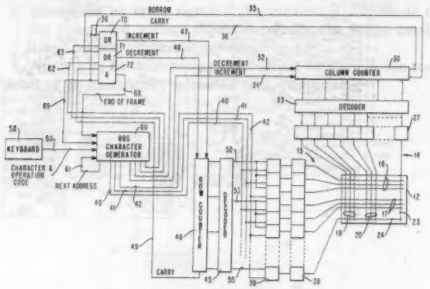


1. In a signal conditioner circuit for developing reliable command output signals from mechanical switch input signals having contact bounce both on closure to voltage potential and on opening: mechanical switch signal input means; one shot multivibrator means; logic level actuation delay circuit means; circuit means interconnecting said mechanical switch signal input means as a signal source to the input of said one shot multivibrator means and to the input of said logic level actuation delay circuit means; OR gate means connected for receiving the output of said one shot multivibrator means and the output of said logic level actuation delay circuit means, the output of said OR gate circuit means comprising a pulse, the leading edge of which coincides with the time occurrence of the first contact during contact bounce on switch closure as defined by the time of said one shot multivibrator means, with said OR gate means output pulse being maintained through off intervals of said one shot multivibrator means while the switch signal input means remains on, by time overlapping activation of said logic level actuation delay circuit means; said mechanical switch signal input means comprising a plurality of mechanical switches, each of said switches connected for actuation from contact closure connection to a voltage potential reference source to contact closure actuation connection to a DC source; said circuit means comprising logic circuitry responsive to the voltage levels respectively defined by said reference and DC voltage sources; said logic circuitry comprising a first plurality of six logic circuits defining a first level of logic circuitry, each of said first plurality of circuits connected to and responsive to closure of an associated pair of a plurality of 12 of said mechanical switches, to develope an output level defined by said DC voltage source in response to a single one of said associated pair of mechanical switches being closed to connection with said DC voltage source; a second plurality of three like logic circuits defining a second level of logic circuitry, each of said second plurality of circuits connected to the outputs of an associated respective pair of said first plurality of logic circuits, a further logic circuit, defining a third level of logic circuitry, connected to the outputs of first and second ones of said second plurality of logic circuits; a second further like logic circuit connected respectively to the output of the third one of said second plurality of logic circuits and the output of said further logic circuit, with the output of said second further logic circuit comprising the output of said logic circuitry and being applied to said filter circuit means.

3,962,700
ALPHANUMERIC GAS DISPLAY PANEL WITH MODULAR CONTROL

Tony N. Criscimagna, Woodstock, and Albert O. Piston, Catskill, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Dec. 30, 1974, Ser. No. 537,238
Int. Cl.² G06F *3/14*
U.S. Cl. 340—324 M **6 Claims**



1. A modular display system, comprising,

a display panel having a row and column array of light emitting cells, means for producing a write operation at selected row and column coordinates of the array, and a row counter and a column counter for selecting the coordinates of a next character position for the write operation,

means for supplying a signal defining a graphic symbol to be written in a next character position of the display, character generator and control means responsive to said symbol signal for supplying symbol forming signals to said write means and for supplying control signals, including column increment signals, for associated operations of the display system,

means connecting said character generator and control means to provide increment signals to said column counter to advance the character position as a write operation proceeds, and

means connecting said row counter and said column counter to provide carry signals to said character generator and control means to initiate an operation at the end of A line and at the end of a frame.

3,962,701
CODED COUNTING SEQUENCE AND LOGIC IMPLEMENTATION THEREOF TO DRIVE A DISPLAY PATTERN

Gary L. Heimbigner, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 23, 1974, Ser. No. 535,642
Int. Cl.² G06K *15/18*; H03K *21/18*
U.S. Cl. 340—336 **17 Claims**

1. In combination,

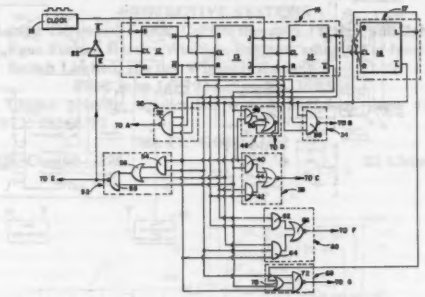
first counter means having input and output terminal means,

second counter means having a plurality of input and output terminal means, at least one of said input terminal means of said second counter means connected to said output terminal means of said first counter means to receive signals therefrom,

each of said plurality of output terminal means of said second counter means connected in a cross-coupled feedback network to said plurality of input terminal means of said second counter means to provide complementary feedback signals thereto,

logic means connected to receive signals from said output terminal means of both said first and second counter means and to produce a plurality of output signals representative of the signals produced by said first and second counter means, and

feedback means connected from said logic means to the input terminal means of said first counter means.

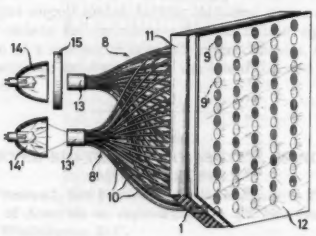


3. The combination recited in claim 1, wherein at least one of said plurality of input terminal means of said second counter means includes a clock input terminal, said output terminal means of said first counter means connected to said clock input terminal.

3,962,702
OPTICAL FIBER DISPLAY DEVICE

Wolfgang Kriege, Mainz, Germany, assignor to Jenaer Glaswerk Schott & Gen., Mainz, Germany

Filed Feb. 19, 1975, Ser. No. 551,143
Claims priority, application Germany, Mar. 1, 1974, 7407095[U]; Aug. 5, 1974, 2437580
Int. Cl.² G08B *5/00*; G02B *9/14*
U.S. Cl. 340—380 **17 Claims**



1. Signal display means comprising

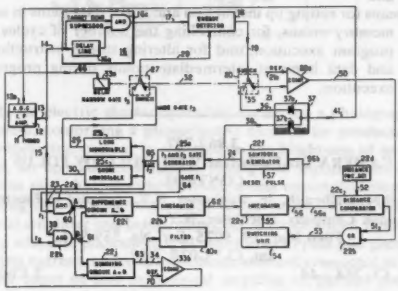
A. a multi-strand set of light conductors comprising light-transmitting fibers, each light conductor having two ends, the set of light conductors being arranged to have a first end of each of the light conductors bundled together and being arranged to have a second end of each of the light conductors separated to be free of the other light conductors in the set, a second end of each light conductor being arranged in a display matrix, and

B. light-transmitting cone means comprising at least one light-transmitting cone, the cone means being optically attached to one end of each of the light conductors.

3,962,703
AIRBORNE TELEMETERING RADAR HAVING VARIABLE WIDTH RANGE GATES

Gérard Collot, Saint-Germain-en-Laye, and Jean Ferreol, Palaiseau, both of France, assignors to Societe Dite: Electronique Marcel Dassault, Paris, France

Continuation-in-part of Ser. No. 260,177, June 6, 1972, abandoned. This application May 31, 1974, Ser. No. 475,026
Claims priority, application France, June 8, 1971, 71.20758
Int. Cl.² G01S 9/14
U.S. Cl. 343—7.3 3 Claims



1. An airborne target acquisition and range tracking radar receiver, comprising:

an intermediate frequency amplifier, to the input of which return radar signals are applied;

a gain control unit of said amplifier;

echo suppressor means coupled to the output of said I.F. amplifier for suppressing a target echo from the return radar signal;

energy detector means having one input coupled to the output of said suppressor means for detecting the energy of an echo return radar signal other than a target echo;

range gate generating means generating first and second adjacent range gates as well as a third gate adjacent to one of said first and second gates and supplying said third gate to said detector means, said third gate having two possible widths of different magnitude;

means for selectively coupling one of said two widths of said third gate to a second input of said detector means;

first control means coupled to said automatic gain control unit for controlling the gain thereof;

second control means;

means coupling an output of said second control means to said range gate generating means for controlling the generation of said range gates; and

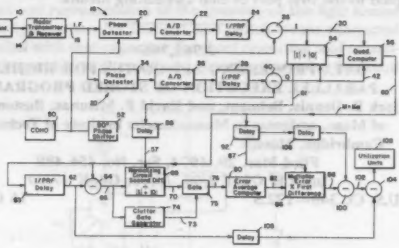
further means selectively coupling the output of said energy detector means to inputs of said first and second control means for selectively controlling the gain of said automatic gain control unit and the generation of said range gates as a function of the output of said energy detector means;

wherein said first control means includes means having inputs coupled to said further selective coupling means and to said range gate generating means and an output coupled to said gain control unit and providing at its output the signal of larger amplitude from between its two inputs, whereby the tracking of a target is discontinued when the energy in said third range gate is greater than that in said first and second range gates.

3,962,704
MOVING TARGET INDICATOR CLUTTER TRACKER

Norol T. Evans, San Pedro, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 31, 1974, Ser. No. 475,217
Int. Cl.² G01S 9/42
U.S. Cl. 343—7.7 7 Claims



1. A moving target indicator cancelling system responding to a radar signal having moving target components separated in frequency comprising

first canceller means for developing a first difference signal,

second canceller means for developing a second difference signal,

normalizing means responsive to the amplitude of said first difference signal and to said second difference signal for developing an angular error signal,

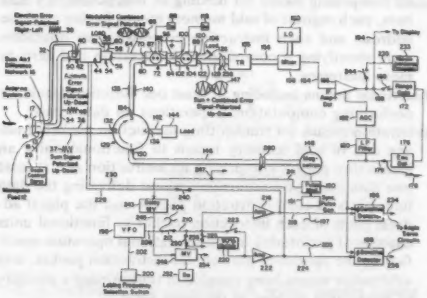
means responsive to said angular error signal and to said first difference signal for developing a corrected first difference signal, and

subtracter means responsive to said corrected first difference signal and to said second difference signal for developing a corrected second difference signal.

3,962,705
RADAR MICROWAVE LOBING SYSTEMS

Richard S. Jamison, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 1, 1963, Ser. No. 256,197
Int. Cl.² G01S 9/22; H01P 5/16, 5/18
U.S. Cl. 343—16 M 13 Claims



4. A radar system responsive to unmodulated elevation error signals, azimuth error signals and sum signals comprising a modulator responsive to the elevation and azimuth error signals coupled in space quadrature for rotating said error signals at a predetermined velocity and including a plane of acceptance for polarizing the rotating error signals as modulated error signals, first and second hybrid means each having first and second input and output sections, the first input of said first hybrid means coupled to said modulating means for receiving the modulated error signals, the first and second outputs of said first hybrid means respectively coupled to said first and second inputs of said second hybrid means, said first and second hybrid means each having a pair of movable ports

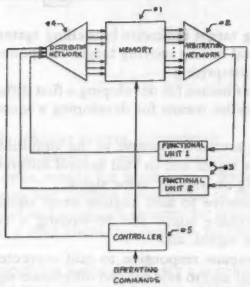
for selectively preventing division of energy therein, a dissipative load coupled to the first output of said second hybrid means, circulating means having first, second, third and fourth ports with the second port responsive to said sum signals, the third port coupled to the second input of said first hybrid means and the fourth port coupled to the second output of said second hybrid means, and signal processing means coupled to the first port of said circulating means.

3,962,706

DATA PROCESSING APPARATUS FOR HIGHLY PARALLEL EXECUTION OF STORED PROGRAMS

Jack B. Dennis, Belmont, and David P. Misunas, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 29, 1974, Ser. No. 456,488
Int. Cl.² G06F *3/00*, *13/00*; G06K *17/00*
U.S. Cl. 340—172.5 **16 Claims**



1. A data processing apparatus for highly parallel execution of stored programs, comprising:

memory means for holding instructions of a data processing program and data items for processing under direction by said program, said memory means comprising a plurality of cells, each cell comprising plural registers, each register comprising means for holding an instruction or a data item, each register of said memory means having a unique address, and each instruction comprising an operation code specifying a computational operation and zero or more addresses;

functional means including at least one functional unit for performing computational operations on data items.

arbitration means for transmitting instruction packets from any cell of said memory means to functional units, an instruction packet comprising an instruction and at least one data item, said arbitration means delivering the data item parts of each instruction packet and the plural address parts of each instruction packet to functional units capable of performing the computational operation specified by the operation part of said instruction packet; said arbitration means beng capable of transmitting a plurality of instruction packets at the same time;

distribution means for transmitting result pockets from said functional units to registers of said cells, a result packet comprising a data item and an address, said distribution means delivering the data item part of each result packet to the register specified by the address part of the result packet, said distribution means being capable of transmitting a plurality of result packets at the same time;

said functional means further comprising: means for separating the data items and address parts of instruction packets received from said arbitration means; means for performing a computational operation on the data items to produce a new data item; means for holding addresses during the performance of computational operations on the associated data items; means for combining a data item and one or more addresses into one or more result packets for transmission through said distribution means;

each register of each cell indicating whether it contains an instruction or data item and whether it is full or empty; and each register accepting a data item delivered to it by said distribution means as said register becomes empty, each register further indicating that it is full when an instruction or data item has been transferred into said register, each cell presenting to said arbitration means an instruction and data items held in its registers just as all registers of said cell are full; each register contributing its contents as part of an instruction packet transmitted to said arbitration means while retaining the instruction or data item and maintaining a full indication or otherwise becoming empty and changing to an empty indication; and

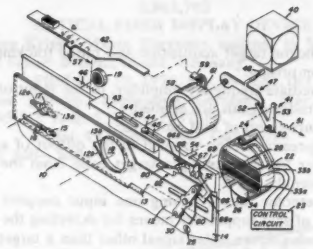
means for setting up instruction and initial data items in said memory means, for controlling the number of cycles of program execution, and for altering stored instructions and data items at intermediate points during program execution.

3,962,707

CAMERA DIAPHRAGM WITH FOLLOW FOCUS CONTROL

Floyd M. Galbraith, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 19, 1975, Ser. No. 559,937
Int. Cl.² G03B *7/08*
U.S. Cl. 354—44 **2 Claims**



1. In a camera adapted to receive, a flash unit and having an adjustable diaphragm, a focusable lens and focus control for said lens, apparatus for adjusting said diaphragm in proportion to the focusing of said lens, said apparatus comprising:

an electronic circuit including an element responsive to scene brightness for influencing said circuit in response to said brightness;

a differential motor, coupled with said circuit and said diaphragm, for moving said diaphragm to form an aperture of size related to ambient scene brightness received by said scene brightness responsive element;

a rocker mounted to be movable about an axis and being located to engage said differential motor;

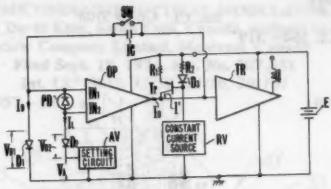
a slider, associatable with said focus control and said rocker and being movable with movement of said focus control to move said rocker about said axis; and

a retainer, coupled with said slider to retain said slider in an inactive condition wherein it is held from movement with said focus control, and being responsive to a received flash unit to permit said slider to move to an active condition wherein it is permitted to move with said focus control, said retainer being disengaged from said slider in said active condition.

3,962,708
ELECTRIC SHUTTER OPERATING CIRCUITS

Sadao Muramatsu, Sagamihara, Japan, assignor to Yashica Co., Ltd., Tokyo, Japan

Filed May 3, 1974, Ser. No. 466,819
Claims priority, application Japan, May 11, 1973, 48-52339
Int. Cl.² G03B 7/08
U.S. Cl. 354—51 3 Claims



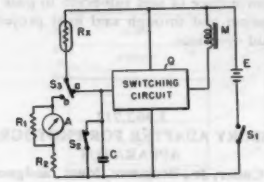
1. An electric shutter operating circuit for a photographic camera, comprising a photoelectric element for producing a photoelectric current in response to the brightness of an object, an operational amplifier having two inputs connected across said photoelectric element, a first impedance element having one terminal connected to one input of said operational amplifier and being connected in series circuit relationship with said photoelectric element so as to pass said photoelectric current, a second impedance element connected to the other input of said operational amplifier in parallel circuit relationship with said series connected first impedance element and said photoelectric element, a feedback circuit extending between the output and said other input of said operational amplifier for passing feedback current through said second impedance element, an integrating capacitor connected in said feedback circuit, switch means interlocked with the shutter release button of said camera for causing said integrating capacitor to begin to integrate the feedback current upon said shutter release button being depressed, a shutter trigger circuit connected to the output of said operational amplifier for closing the shutter of said camera upon the voltage across said integrating capacitor reaching a predetermined value, and constant current circuit means connected to the output of said operational amplifier in parallel circuit relationship with said shutter trigger circuit for normally adding to the output from said operational amplifier a relatively small current in contrast to the normal feedback current obtained under normal brightness conditions whereby the sum of the small constant current and the output from the operational amplifier equals the feedback current which is proportional to the photoelectric current and under low brightness conditions where the output current from the operational amplifier is reduced to zero the shutter trigger circuit will be actuated in time by the small current supplied through the feedback circuit to the integrating capacitor from the constant current circuit means.

3,962,709
EXPOSURE TIME CONTROL CIRCUIT

Kiyoshi Kitai, Tokyo; Yukio Nakamura, Yotsukaido; Hiroaki Ishida, Yotsukaido, and Shinji Nagaoka, Yotsukaido, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Continuation of Ser. No. 377,933, July 10, 1973. This application Dec. 17, 1974, Ser. No. 533,537
Claims priority, application Japan, July 10, 1972, 47-68842
Int. Cl.² G03B 7/08, 17/18
U.S. Cl. 354—51 3 Claims

1. An exposure time control circuit for a shutter comprising, a power source, a switching circuit connected across the power source, a capacitor for applying a signal to the switching circuit for effecting closing of the shutter, a light-detecting circuit comprising a light-responsive element connected to said power source for varying charging of said capacitor as a function of the intensity of light sensed from an exposure scene that is to be photographed to thereby control the shutter exposure time, a light-intensity indicating circuit connected directly in series with said light-detecting circuit light-responsive element and in series with said capacitor to indicate the value of the current passing through said light-responsive element and representative of the intensity of the light sensed by said light-responsive element, and switch means connected in parallel with said capacitor for short circuiting said capacitor and operable to alternatively place the capacitor in circuit

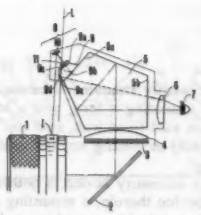


with said light-responsive element for charging thereof to a predetermined level and for taking the capacitor out of circuit and for independently of control of the charging of said capacitor taking a reading of the intensity of the light being sensed by said light-responsive element, said light-intensity indicating circuit comprising said light-responsive element and an ammeter connected directly to said light-responsive element to receive the output thereof directly and a resistor shunting the ammeter, and said resistor and said ammeter having a resistance considerably less than the internal resistance of said light-responsive element.

3,962,710
VIEWFINDER FOR A SINGLE LENS REFLEX CAMERA

Youichi Okuno, Yokohama, and Hideo Yokota, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Nov. 1, 1974, Ser. No. 520,132
Claims priority, application Japan, Nov. 7, 1973, 48128850
Int. Cl.² G03B 13/02
U.S. Cl. 354—225 7 Claims



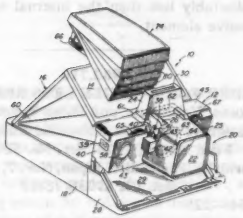
1. A viewfinder for a single lens reflex camera having an object lens, a lens barrel containing the object lens, and photograhic information provided on the lens barrel, said viewfinder comprising, in combination, a focusing screen on which an object image is formed by said object lens; an eye piece; a pentagonal roof prism directing light from said focusing screen toward said eye piece; said pentagonal roof prism having an incident light entry surface on which light from said focusing screen is incident, two roof reflection surfaces, a front reflection surface, a front non-reflection surface and a light projection surface opposite said eye piece; a sub-prism having an incident light entry surface, a plurality of intermediate reflection surfaces, a final reflection surface and a light projection surface; said light projection surface of said sub-prism being cemented to said front non-reflection surface and

said final reflection surface of said sub-prism being positioned outwardly of said intermediate reflection surfaces; and optical means positioned above said final reflection surface of said sub-prism and having a reflecting surface facing said photographic information on said lens barrel and said incident light entry surface of said sub-prism; whereby light from said photographic information is reflected by the reflecting surface of said optical means and directed into said sub-prism through said incident light entry surface of said sub-prism, the light being then reflected by said intermediates reflection surfaces of said sub-prism and directed into said pentagonal prism through said light-projection surface of said sub-prism by said final reflection surface of said sub-prism to pass through said pentagonal prism and through said light projection surface thereof to said eye piece.

3,962,711
ACCESSORY ADAPTER FOR PHOTOGRAPHIC APPARATUS

Norman W. Cutler, Jr., Braintree, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 16, 1974, Ser. No. 533,327
Int. Cl.² G03B 17/56
U.S. Cl. 354—295 **1 Claim**



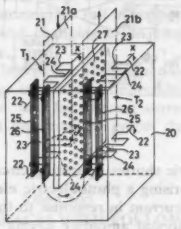
1. An accessory attachment for use with a camera having a front wall mounting a lens, and a top wall extending rearwardly from said front wall, said top wall being formed with a downwardly-extending socket, said accessory attachment comprising:

a camera accessory device, a housing mounting said accessory device therein, a mounting element having a lower surface receivable on said top wall, a plug attached to said lower surface and extending downwardly therefrom, said plug being slidably receivable in said socket to attach said mounting element to said camera, clip means attached to said mounting element and engageable with a downwardly-facing surface of said camera, a pair of cantilever arms attached to said mounting element and extending forwardly from said front wall of the camera in the attached position of said mounting element thereon, said housing being pivotally attached to said cantilever arms and normally suspended thereby in operative relation to said front wall of the camera, said housing being angularly movable about said pivotal attachment to positions raised from said front wall to permit access thereto, and releasable latch means for engaging said housing to said mounting element in said normally suspended operative relation.

3,962,712
APPARATUS FOR TRANSPORTING STRIP-SHAPED OR SHEET-SHAPED MATERIALS

Werner Merz, Oberelchingen, and Werner Michaelis, Stuttgart, both of Germany, assignors to Merz & Co., Oberelchingen, Germany

Filed Oct. 16, 1974, Ser. No. 515,423
Claims priority, application Germany, Oct. 17, 1973, 2352069
Int. Cl.² G03D 3/08
U.S. Cl. 354—319 **21 Claims**

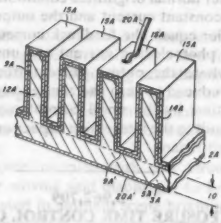


1. An apparatus for transporting strip-shaped or sheet-shaped materials, especially photographic material, comprising first means including a plurality of hollow material-engaging elements having respective material-engaging surfaces which are perforate, and suction means communicating with the interior of the elements; and second means for moving said elements sequentially in paths in each of which the respective element moves into engagement with the material, transports the material through a predetermined distance, and then moves out of engagement with the material.

3,962,713
LARGE VALUE CAPACITOR

Don L. Kendall, and Walter T. Matzen, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 259,332, June 2, 1972, abandoned. This application Oct. 25, 1973, Ser. No. 409,509
Int. Cl.² H01L 29/93
U.S. Cl. 357—14 **3 Claims**



1. A microelectronic capacitance device comprising:

a. a semiconductor substrate of one conductivity type having first and second surfaces and a resistivity no greater than 0.01 ohm-centimeter,

b. a multiplicity of parallel semiconductor studs of said one conductivity type integral with and extending perpendicularly from said one surface, said studs having a resistivity of at least 0.06 ohm-centimeter, said studs also having a p-n junction therein, formed by a thin surface layer of semconductor of opposite conductivity type,

the height of said studs, measured perpindicularly from said one surface, being larger than the average center to cen-

ter spacing of said studs, whereby the area of said P-N junction is substantially larger than that of a planar P-N junction, for similar substrate areas, and

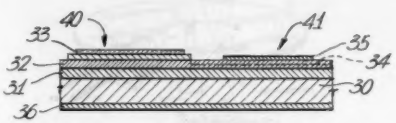
c. an adherent film of conductor coating said surface layer of opposite conductivity type and having an electrical contact thereto.

3,962,714

SEMICONDUCTOR OPTICAL MODULATOR

Frederick David King, Smith Falls, Canada, assignor to Northern Electric Company Limited, Montreal, Canada

Filed Sept. 19, 1974, Ser. No. 507,451
Int. Cl.² H01L 31/12, 31/16, 29/161
U.S. Cl. 357—19 6 Claims



1. A semiconductor optical modulator, comprising:

a substrate of GaAs semiconductor material, of one conductivity type;

a confining layer of highly doped GaAlAs semiconductor material on said substrate, said confining layer of the same conductivity type as said substrate;

an active layer of low doping level GaAs semiconductor material on said confining layer, said active layer of the same conductivity type as said confining layer;

an insulating layer on said active layer, said insulating layer of high dielectric strength and having a lower refractive index than said active layer; and

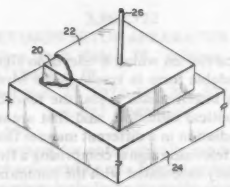
means for applying a variable bias to said insulating layer, whereby light passing through the active layer is modulated on application of said variable bias.

3,962,715

HIGH-SPEED, HIGH-CURRENT SPIKE SUPPRESSOR AND METHOD FOR FABRICATING SAME

Paul M. Raccah, Hillside; Teodoro Halpern, Teaneck, both of N.J., and Soo Hee Shin, Bronx, N.Y., assignors to Yeshiva University, New York, N.Y.

Filed Dec. 3, 1974, Ser. No. 529,222
Int. Cl.² H01L 45/00
U.S. Cl. 357—2 9 Claims



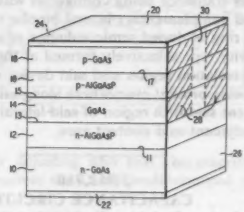
1. A spike suppressor comprising a pair of electrodes, a conducting refractory substrate of single-crystal NbO, and at least one layer of refractory crystalline NbO_3 on said substrate, said substrate and at least one crystalline layer of NbO_2 being secured between said pair of electrodes, and said at least one crystalline layer having a total thickness of at least 1 micron.

3,962,716

REDUCTION OF DISLOCATIONS IN MULTILAYER STRUCTURES OF ZINC-BLEND MATERIALS

Pierre Marc Pétroff, Westfield, and George Arthur Rozgonyi, Chatham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 414,674, Nov. 12, 1973, abandoned. This application Apr. 25, 1974, Ser. No. 463,870
Int. Cl.² H01S 33/19; H01L 29/161, 29/205
U.S. Cl. 357—18 11 Claims



1. A semiconductor device comprising

a first layer of a material having a zinc-blende crystallographic structure and exhibiting a non-zero dislocation density,

a second layer of a material having a zinc-blende crystallographic structure formed on said first layer so that misfit dislocations are generated at the interface between said layers,

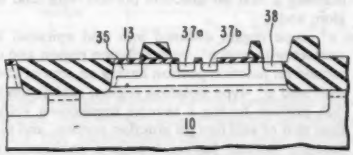
the thickness and composition of said second layer being effective to generate a unidirectional array of misfit dislocations at said interface which virtually prevents any defects in said first layer from extending into said second layer.

3,962,717

OXIDE ISOLATED INTEGRATED INJECTION LOGIC WITH SELECTIVE GUARD RING

David O'Brien, Mountain View, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Oct. 29, 1974, Ser. No. 518,445
Int. Cl.² H01L 27/04, 29/72
U.S. Cl. 357—44 8 Claims



2. An oxide-isolated semiconductor structure comprising:

a semiconductor body;

an epitaxial layer overlaying said semiconductor body, said epitaxial layer being of one conductivity type;

an oxide-isolation region composed of the oxide of the semiconductor of said semiconductor body which surrounds and defines a device region in said epitaxial layer;

at least one semiconductor device formed in said device region, said device comprising an integrated structure having a vertical bipolar transistor with first, second and third transistor regions of said one conductivity type, conductivity opposite to said one conductivity type, and said one conductivity type, respectively, with a P-N junction separating said first and second transistor regions and a P-N junction separating said second and third transistor

regions, said first region abutting the surface of said epitaxial layer and said third region having a contact area abutting said surface of said epitaxial layer and said oxide-isolation region; and a complementary lateral bipolar transistor having fourth, fifth and sixth transistor regions of said opposite conductivity type, said one conductivity type, and said opposite conductivity type, respectively, with a P-N junction separating said fourth and fifth transistor regions and a P-N junction separating said fifth and sixth transistor regions, said fifth region abutting said oxide-isolation region; said second region of said vertical bipolar transistor being contiguous with said sixth region of said complementary lateral bipolar transistor; and

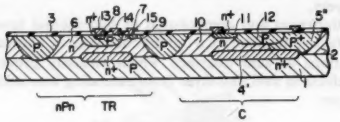
a guard ring of doped semiconductor of said opposite conductivity type selectively formed at the interface of said oxide-isolation region and said device region; said guard ring being present everywhere along said interface except adjacent said fifth region of said lateral bipolar transistor and adjacent said contact area.

3,962,718

CAPACITANCE CIRCUIT

Fumihito Inoue, Kodaira; Yoshiji Nakajima, Fuchu, and Noboru Horie, Kodaira, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 4, 1973, Ser. No. 403,406
Claims priority, application Japan, Oct. 4, 1972, 47-99061
Int. Cl.² H01L *27/04*
U.S. Cl. 357—48 **5 Claims**



1. A capacitance circuit comprising:

a p-type semiconductor substrate;

an n-type epitaxial semiconductor layer disposed on said substrate;

an n^+ - type buried region disposed at the junction between said substrate and said epitaxial layer;

a p^+ -type isolation region diffused into said epitaxial layer into contact with a portion of said buried region and defining a first pn junction portion with said buried region; and

an n^+ -type region diffused into said epitaxial layer into contact with said p^+ -type isolation region and defining a second pn junction portion having an area of about $200\mu^2$ with said p^+ -type isolation region, said second pn junction portion having a reverse breakdown voltage lower than that of said first pn junction portion, and said first pn junction portion having a large capacitance relative to said second pn junction portion.

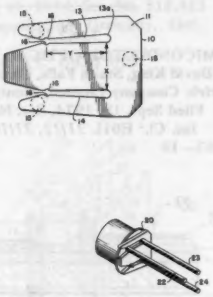
3,962,719

MOUNTING PAD AND SEMICONDUCTOR ENCAPSULATION DEVICE COMBINATION

Wayne K. Pfaff, Irving, Tex., assignor to Plastronics, Inc., Farmers Branch, Tex.

Filed Dec. 5, 1974, Ser. No. 529,727
Int. Cl.² H01L *23/12*
U.S. Cl. 357—74 **3 Claims**

1. In combination, a semiconductor encapsulation device having at least two substantially parallel leads projecting from a single face thereof in substantially the same plane and a mounting pad comprising a body of electrically non-conductive material having first and second substantially oppositely disposed major faces and at least one transverse slot therein normal to said major faces traversing a major portion of said major faces and intersecting only one edge of said body, said slot having a non-uniform width, the slot being widest at the point of its intersection with said edge and narrowest at a point intermediate said edge and the terminal end of said slot, the width of said slot generally expanding from the narrowest



point to a width substantially matching the width of the leads projecting from the encapsulation device at the terminal end of said slot, said slot further including a notch in at least one side thereof at said narrowest point, and one lead passing through said slot at the terminal end thereof and a second lead passing through said notch.

3,962,720

RECORD CARRIER ON WHICH A TELEVISION SIGNAL IS STORED

Josephus Johannes Maria Braat, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 6, 1974, Ser. No. 530,165
Claims priority, application Netherlands, Oct. 3, 1974, 7413044
Int. Cl.² H04N *5/76, 9/00*
U.S. Cl. 358—4 **5 Claims**

1. A record carrier on which a television signal is stored in an optically readable form in tracks in the form of first areas alternating with intermediate areas, the record carrier being readable with optical radiation, said first areas influencing a read beam of radiation in a different manner than the intermediate areas, the television signal comprising a first carrier wave which is frequency modulated with the luminance information and further carrier waves which are modulated with other information, the tracks of the information structure exhibiting an undulation, the first carrier wave being defined by the spatial frequency of the first areas, the undulation of the tracks corresponding to the further carrier waves, the undulation amplitude being substantially smaller than the period of the track structure in a direction transverse to the direction in which the tracks are read and the frequency of the first carrier wave being at least twice as high as the frequency of the further carrier waves.

3,962,721

APPARATUS FOR READING A DISC-SHAPED RECORD CARRIER WITH VIDEO LUMINANCE AND CHROMINANCE INFORMATION

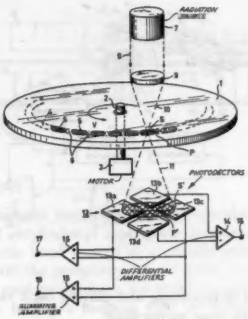
Maarten Rutger de Haan, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 6, 1974, Ser. No. 530,276

Claims priority, application Netherlands, Oct. 7, 1974, 7413162

Int. Cl.² H04N 5/84; G11B 7/00

U.S. Cl. 358—4 4 Claims



1. In an apparatus for reading an optically encoded disc-shaped record carrier having information provided thereon in the form of parallel extending tracks, the apparatus comprising a radiation source for optically scanning said tracks, a multi-element photoelectric detector unit provided with two read detectors offset relative to each other in a direction parallel to an image of the track direction formed by the use of said radiation source for converting the image into electrical signals, and a first combination circuit connected to said two read detectors for provided a first signal channel of the information read from said carrier, the improvement comprising a second combination circuit connected to said two read detectors for adding the electrical signals therefrom and for providing a second signal channel of said information read from said carrier, and filter means connected to said first combination circuit and said second combination circuit for deriving from said first combination circuit that portion of said first signal channel of the information read from said carrier that exceeds a predetermined frequency and for deriving from said second combination circuit that portion of the second signal channel of said information read from said carrier that is below said predetermined frequency.

3,962,722

COLOR TELEVISION SETUP APPARATUS AND METHOD

Walter S. Ciciora, Park Ridge, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Nov. 27, 1974, Ser. No. 527,556

Int. Cl.² H04N 9/62

U.S. Cl. 358—10 14 Claims

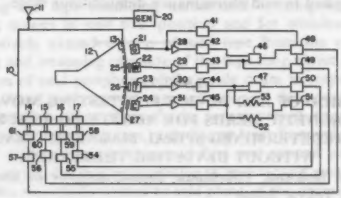
11. A setup system for automatically establishing and second viewable characteristics of a television receiver at desired settings, said receiver including adjustable elements for adjustment of said characteristics, comprising:

signal generation means for producing first and second patterns on the picture tube of said receiver which differ in the first of said viewable characteristics;

light sensitive means comprising photocells positioned adjacent to said picture tube in alignment with corresponding ones of said patterns for generating a first signal indicative of said first characteristic in said first pattern and a second signal indicative of said first characteristic in said second pattern;

motor means engageable with said adjustable elements; said first and second signals bearing a predetermined ratio when said first characteristic is at its desired setting;

means operating said motor means for adjusting said adjustable elements until said signals indicate said characteristics are at said desired settings including



first means for adjusting said first characteristic of said television receiver until said predetermined ratio is obtained; and

second means for adjusting said second characteristic of said television receiver to its desired setting.

3,962,723

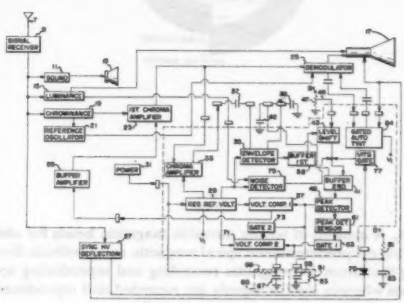
AUTOMATIC PEAK COLOR CONTROL CIRCUIT

Gopal Krishna Srivastava, Amherst, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Continuation of Ser. No. 409,655, Oct. 25, 1973, abandoned. This application July 15, 1974, Ser. No. 488,807

Int. Cl.² H04N 9/535

U.S. Cl. 358—27 26 Claims



1. In a color television receiver having a luminance channel, a power source, high voltage, synchronization and deflection means and a first chrominance amplifier stage providing a chrominance output signal to a chrominance demodulation stage, an automatic peak color control circuit comprising:

a source of regulated reference potential coupled to said power source;

chrominance signal amplifier means coupled to said source and said chrominance amplifier stage of said receiver;

a potential level shifting means coupled to an adjustable potential source for providing a DC potential of a polarity opposite and in an amount substantially proportional to a maximum chroma signal derived from said chrominance signal amplifier means;

envelope detector means coupled to said chrominance signal amplifier means and to said source of regulated reference potential for providing a filtered low frequency half-envelope chroma signal;

peak detector means coupled to said potential level shifting means and to said envelope detector means for providing a DC potential representative of the peak magnitude of the chroma signal; and

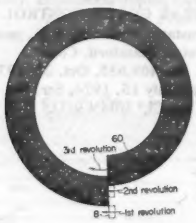
voltage comparator means coupled to said source of regulated reference potential and to said peak detector means and responsive to a potential differential therebetween for providing a control signal to effect alterations in gain of said first chrominance amplifier stage whereby a chrominance signal of substantially constant magnitude is applied to said chrominance demodulator stage.

3,962,724

METHOD OF AND DEVICE FOR TESTING MOVABLE MAGNETIC HEADS FOR ABILITY TO TRACE A PREDETERMINED SPIRAL MAGNETIC TRACK WITHOUT DEVIATING THEREFROM

Masami Koizumi, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed May 11, 1973, Ser. No. 359,364
Claims priority, application Japan, May 16, 1972, 47-48842
Int. Cl.[2] G11B 27/36, 21/10
U.S. Cl. 360—31 5 Claims



1. A method of testing movable magnetic heads for ability to trace a predetermined spiral magnetic track without deviating therefrom for magnetic recording and reproducing apparatus wherein electric signals are recorded and reproduced in a spiral track, comprising the steps of

a. magnetically recording a magnetic head deviation detection signal in a spiral signal track on a testing sheet for disposition of the signal on a first convolution of the predetermined spiral magnetic track and both sides of said first convolution, such that said spiral signal track has a width equal to the width of the predetermined spiral magnetic track plus the width of the two recordingless zones on both sides of said first convolution, and has an edge coincident with an edge of a convolution of said predetermined spiral magnetic track adjacent said first convolution;

b. juxtaposing said sheet to a turntable carrying a magnetic head to be tested;

c. operating the turntable and head for tracing of the detection signal by the head and production of output power representative of the signal as detected by the head, the operating step including moving the head in a radial direction with respect to the axis of turntable rotation during tracing of the detection signal by the head; and

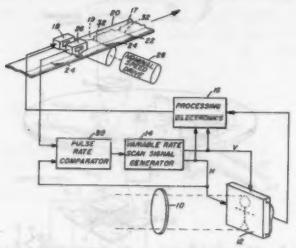
d. detecting the produced output power level to determine deviation of the head from the predetermined spiral track as represented by departure of said output power level from a predetermined relation to said signal.

3,962,725

MAGNETIC-TAPE CARTRIDGE-LOADED PORTABLE VIDEO CAMERA USING PRERECORDED TIMING SIGNALS TO CONTROL THE VIDEO TIME BASE

James U. Lemke, and Robert A. Lentz, both of Del Mar, Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1974, Ser. No. 519,178
Int. Cl.[2] H04N 5/78, 3/30
U.S. Cl. 360—36 12 Claims



1. A method of recording and playing back video information on magnetic tape comprising:

a. first recording along the length of said magnetic tape timing signal information while moving said tape at a precise nominal speed;

b. thereafter moving said tape at approximately said nominal speed past a record head;

c. applying video signals to said record head while varying the time base of said video signals as a function of variations in tape speed relative to said precise nominal speed; and

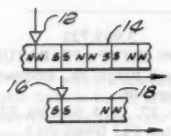
d. thereafter moving said tape at precisely said nominal speed while playing back said video signals recorded by said record head.

3,962,726

SELF-CLOCKING MAGNETIC RECORD SENSING SYSTEM

Robert Sutherland De Land, Jr., Torrance, Calif., assignor to Mag-Tek, Inc., Carson, Calif.

Filed Feb. 21, 1975, Ser. No. 551,875
Int. Cl.[2] G11B 5/09
U.S. Cl. 360—51 9 Claims



1. An information pulse signal processing system for use with a magnetic recording medium and relatively moving inductive head means, comprising:

means to receive a sensed signal from said head means;

threshold means connected to receive said sensed signal for establishing a current amplitude level in accordance with the amplitude of said sensed signal during an immediately prior period; and

binary signal-forming means for providing a pulse upon occurrences of said sensed signal attaining a predetermined relationship with respect to said current amplitude level.

3,962,727

MAGNETIC ROTARY HEAD RECORDER WITH AUTOMATIC TAPE LOADING AND UNLOADING

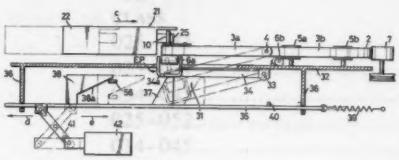
Tomohisa Kamimura, Ichikawa, and Makoto Suzuki, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 20, 1974, Ser. No. 525,677

Claims priority, application Japan, Nov. 20, 1973, 48-130404

Int. Cl.² G11B *15/66, 23/04*

U.S. Cl. 360—85 11 Claims



1. In a magnetic recording and/or reproducing apparatus that includes a cylindrical tape guide drum with at least one rotary magnetic head moved in a circular path substantially coinciding with the periphery of said drum, a cassette holder spaced from said guide drum for receiving and positioning a tape cassette having a housing with an access opening and containing a magnetic tape which is wound on reels within the housing and extends between the reels across said opening, and a tape loading and unloading device comprising an annular support means rotatable around said drum between first and second positions in an arcuate path that is substantially planar and extends adjacent said holder, and tape engaging means mounted on said support means so as to extend substantially normal to the plane of said arcuate path and being movable with said support means for extending into said opening of the housing of a cassette positioned by said holder and engaging the tape extending across said opening with said support means in said first position and for withdrawing a progressively extended loop of said tape from the cassette housing and wrapping one side of the tape loop about at least a portion of said periphery of the guide drum in response to movement of said support means from said first position to said second position thereof; the improvement comprising said annular support means including at least first and second arcuate parts, means joining said first and second parts for movement of said first part relative to said second part generally in the directions normal to said plane of the arcuate path, said tape engaging means being mounted on said first part for movement with the latter in said directions normal to said plane of the arcuate path, said first part extending towards said holder in said first position of the support means, and means rotatably carrying said support means and maintaining said first and second parts of the latter in said plane of the arcuate path during movements of said support means between said first and second positions, said means rotatably carrying said support means including means operative to displace said first part in said directions normal to said plane of the arcuate path when said support means is in said first position so as to insert and withdraw said tape engaging means in respect to the opening of a cassette housing positioned by said holder.

DESIGN PATENTS

GRANTED JUNE 8, 1976

ERRATA

For CLASS	See PATENT NO.
025–035	240,216
025–001	240,217
034–045	240,218
025–052	240,219
034–045	240,220
025–074	240,221
016–059	240,268
016–059	240,269
025–080	240,274

DESIGN PATENTS

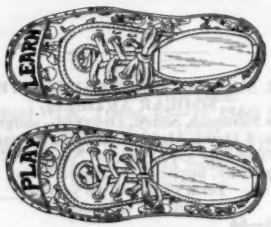
GRANTED JUNE 8, 1976

ERRATA

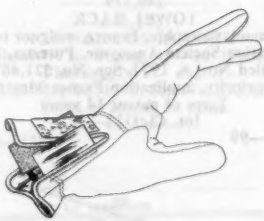
DESIGNS

JUNE 8, 1976

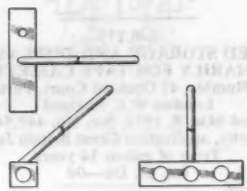
240,170
SPORT SHOE
William J. Cohen, Randolph, Mass., assignor to CITC Industries Inc., New York, N.Y.
Filed June 19, 1974, Ser. No. 480,880
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310



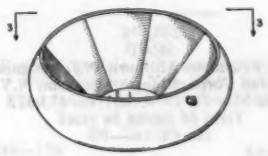
240,171
GOLF GLOVE
James D. Giambazi, 12 Abbott St., Cumberland, R.I. 02864
Filed Jan. 14, 1975, Ser. No. 540,886
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361



240,172
BRUSH HOLDER
Robert Roettgen, Rte. 1, Box 19, Union Grove, Wis. 53182
Continuation-in-part of abandoned design application Ser. No. 181,285, Sept. 15, 1971. This application July 26, 1974, Ser. No. 492,065
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—4

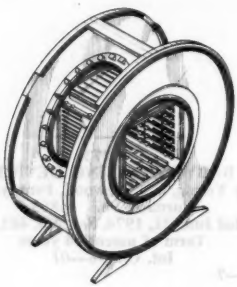


240,173
BABY RETAINING DEVICE
Gary Young, Ramblewood, Pennsylvania Furnace, Pa. 16865
Filed June 21, 1974, Ser. No. 481,763
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—7

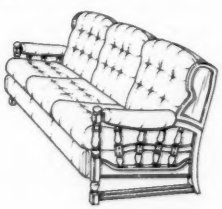


240,174
TABLE FOR FOOD PRODUCTS DISPLAY
Franklin Moore, Jr., 902 McBurney Drive, Lebanon, Ohio 45036
Filed Apr. 30, 1974, Ser. No. 465,516
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—20

240,175
COMBINED STORAGE AND DISPLAY RACK PRIMARILY FOR TAPE CASSETTES
Richard Roy Rumble, 47 Orchard Court, Portland Square, London W.1, England
Filed Mar. 8, 1974, Ser. No. 449,549
Claims priority, application Great Britain Jan. 3, 1974
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—29

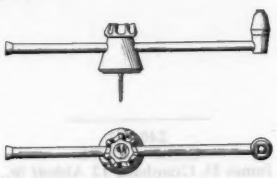


240,176
SEAT
Alan H. Friedman, Millburn, N.J., assignor to Futorian Corporation, Amsterdam, N.Y.
Filed May 28, 1974, Ser. No. 473,612
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



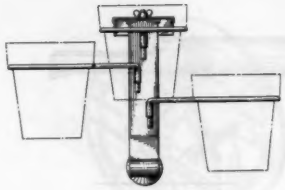
240,177
CONVERTIBLE SEAT OR SIMILAR ARTICLE OF FURNITURE
Frank W. Petersilie, Boone, N.C., assignor to Investments & Innovative Concepts, Inc., Boone, N.C.
Filed Aug. 29, 1974, Ser. No. 501,626
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—64

240,178
WALL SUPPORT FOR HAND SHOWER OR SIMILAR ARTICLE
Frede Johansen, Seden, Denmark, assignor to A/S Dansk Metal & Armaturindustri
Filed July 19, 1974, Ser. No. 489,929
Claims priority, application Denmark Jan. 22, 1974
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—86



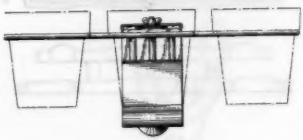
240,179
TOWEL RACK
Guy Vrignaud, Grenoble, France, assignor to Allibert Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,487
Claims priority, application France May 6, 1974
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—99

240,180
FLOWER POT HOLDER
Michael W. K. Young, 45—14 196th St., Flushing, N.Y. 11358
Filed May 30, 1975, Ser. No. 582,211
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—137

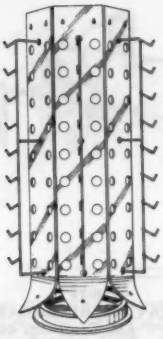


240,181
FLOWER POT HOLDER
Michael W. K. Young, 45—14 196th St., Flushing, N.Y. 11358
Filed May 30, 1975, Ser. No. 582,213
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—137

240,182
FLOWER POT HOLDER
Michael W. K. Young, 45—14 196th St., Flushing, N.Y. 11358
Filed May 30, 1975, Ser. No. 582,418
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—137



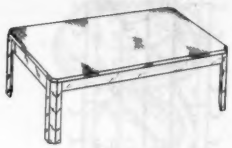
240,183
COUNTER DISPLAY STAND
George Weisenfeld, 11920 Briarvale Lane, and David Halpern, 11301 Dona Isabel Drive, both of Studio City, Calif. 91604
Filed Mar. 20, 1975, Ser. No. 560,567
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—146



240,184
DESK
Richard L. Neuschaefer, Denver, Colo., assignor to Hex Design, Ltd., Denver, Colo.
Filed Aug. 23, 1973, Ser. No. 390,868
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161

240,185
DESK
Leon Rosen, Scarsdale, N.Y., assignor to The Pace Collection Inc., New York, N.Y.
Filed Jan. 17, 1975, Ser. No. 541,890
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—176

240,186
TABLE
Leon Rosen, Scarsdale, N.Y., assignor to The Pace Collection Inc., New York, N.Y.
Filed Jan. 17, 1975, Ser. No. 541,891
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

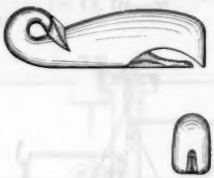


240,187
BAKING PAN HAVING RELEASABLE HANDLES
Wilhelm Kaimeier, 7 Am Graffweg, 465 Gelsenkirchen-Rotthausen, Germany
Filed Feb. 21, 1974, Ser. No. 444,450
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—97

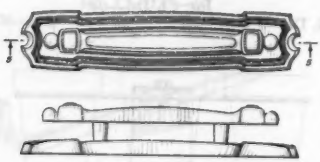
240,188
COMBINED CAN AND BOTTLE OPENER
Robert R. Lytle, 1942 High St., Cuyahoga Falls, Ohio 44221
Filed Nov. 25, 1974, Ser. No. 526,749
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D8—18

240,189
PORTABLE DESOLDERING TOOL OR THE LIKE
William S. Fortune, 14250 Dearborn St., Panorama City, Calif. 91402
Filed Oct. 15, 1974, Ser. No. 514,952
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51

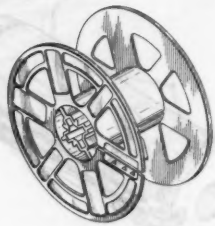
240,190
ENVELOPE OPENER
Ivan D. Cleveland, Everett, Wash. (15828 E. Shore Drive, Lynnwood, Wash. 98036)
Filed Sept. 13, 1974, Ser. No. 505,554
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D8—103



240,191
DRAWER PULL
George D. Read, Glendora, Lawrence Glen McCain, Beverly Hills, and Edward William Scott, Culver City, Calif., assignors to Ajax Hardware Corporation, City of Industry, Calif.
Filed Oct. 15, 1974, Ser. No. 514,825
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—167



240,192
MICROFILM REEL
James G. Balmer, Jr., Bloomfield Hills, Mich., assignor to Xerox Corporation, Stamford, Conn.
Filed July 3, 1974, Ser. No. 485,663
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D8—220



240,193
HANGER FOR FABRIC OR THE LIKE
Phillip Sperling, 3206 Coolidge Ave., Los Angeles, Calif. 90066
Filed Aug. 4, 1975, Ser. No. 601,528
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—249

240,194
OAR REST
Harold H. Foster, 519 Cassandra Lane, Lakeland, Fla. 33801
Filed May 29, 1975, Ser. No. 581,977
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D8—232

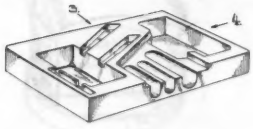
240,195
HANGER FOR FABRIC OR THE LIKE
Phillip Sperling, 3206 Coolidge Ave., Los Angeles, Calif. 90066
Filed Aug. 4, 1975, Ser. No. 601,531
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—249

240,196
HANGER FOR FABRIC OR THE LIKE
Phillip Sperling, 3206 Coolidge Ave., Los Angeles, Calif. 90066
Filed Aug. 4, 1975, Ser. No. 601,529
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—249

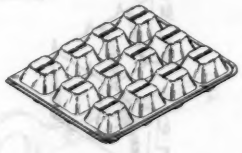
240,197
HANGER FOR FABRIC OR THE LIKE
Phillip Sperling, 3206 Coolidge Ave., Los Angeles, Calif. 90066
Filed Aug. 4, 1975, Ser. No. 601,530
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—249

240,198
PEGBOARD HOOK GUARD
Stanley J. Valiulis, Rockford, Ill., assignor to Southern Imperial, Inc., Rockford, Ill.
Filed Aug. 6, 1974, Ser. No. 495,223
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—263

240,199
PACKAGING TRAY
Alan J. Perfect, Allentown, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed Dec. 20, 1974, Ser. No. 534,612
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185

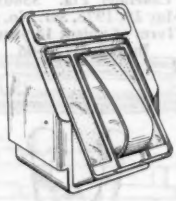


240,200
PACKAGING CONTAINER
Larry M. Lynn, North Vancouver, British Columbia, Canada, assignor to Easy-Scoop Industries Ltd., Vancouver, British Columbia, Canada
Filed Sept. 27, 1974, Ser. No. 509,805
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—187

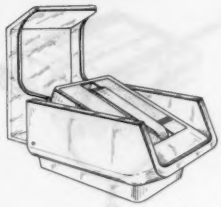


240,201
TONER PARTICLE STORAGE CONTAINER
Donald R. Avolio, Fairport, Edmund G. D'Emilio, Rochester, Claude H. Hutcheson, Jr., Fairport, and Eugene A. Mikolas, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Mar. 30, 1973, Ser. No. 346,486
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—216

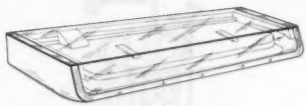
240,202
JEWELRY DISPLAY CASE
Howard Ferguson, Valley Cottage, N.Y., assignor to Bulova Watch Company, Inc., New York, N.Y.
Filed June 27, 1974, Ser. No. 483,616
Term of patent 7 years
Int. Cl. D9—*03*
U.S. Cl. D9—233



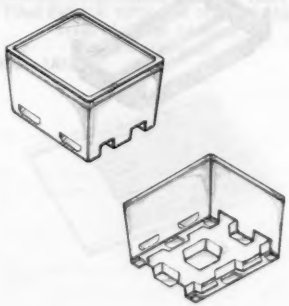
240,203
JEWELRY DISPLAY CASE
Howard Ferguson, Valley Cottage, N.Y., assignor to Bulova Watch Company, Inc., New York, N.Y.
Filed June 27, 1974, Ser. No. 483,617
Term of patent 7 years
Int. Cl. D9—*03*
U.S. Cl. D9—236



240,204
JEWELRY DISPLAY CASE
Howard Ferguson, Valley Cottage, N.Y., assignor to Bulova Watch Company, Inc., New York, N.Y.
Filed June 27, 1974, Ser. No. 483,630
Term of patent 7 years
Int. Cl. D9—*03*
U.S. Cl. D9—236



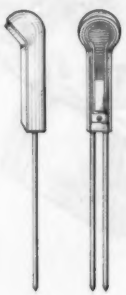
240,205
COLD STORAGE TRANSPORT BOX FOR PERISHABLE FOOD
Gerrit A. Visser, Edmonds, and John O. Olson, Lynnwood, Wash., and Edward Harris, Vancouver, British Columbia, Canada, assignors to Washington Research and Development Inc., Edmonds, Wash.
Filed Aug. 19, 1974, Ser. No. 498,779
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—246



240,206
FLUIDS INDICATING GAUGE
Pierre Paret, Coutras, Gironde, France, assignor to Bornes & Balises, Coutras, Gironde, France
Filed Apr. 22, 1974, Ser. No. 463,061
Claims priority, application France Mar. 1, 1974
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—101

240,207
EMERGENCY WARNING LIGHT
Jhi Hung Leung, San Po Kong, Kowloon, Hong Kong, assignor to Star Industrial Co., Ltd., San Po Kong, Kowloon, Hong Kong
Filed July 3, 1974, Ser. No. 485,585
Term of patent 7 years
Int. Cl. D10—*06;* D26—*02*
U.S. Cl. D10—114

240,208
AUDIBLE SIGNAL FOR PLANT SOIL CONDITIONS
Bjorn N. De Bough, 801 1st NE., Seattle, Wash., and Robert D. Swenson, Seattle, Wash.; said Swenson assignor to said De Bough
Filed July 8, 1974, Ser. No. 486,333
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—116



240,209
BUMPER ENGAGING VEHICLE PARKING GUIDE
Jack Mendelsohn, 108—49 63rd Ave., Forest Hills, N.Y. 11375
Filed July 31, 1974, Ser. No. 493,703
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109

240,210
COMBINED WATCHFACE AND HANDS THEREFOR
Mark Jeffrey Buckingham, Piscataway, Md. (Box 18098, Oxon Hill, Md. 20021)
Filed Dec. 18, 1973, Ser. No. 425,726
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—124

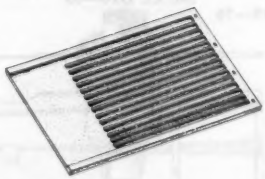
240,211
SAUSAGE CASING HANGER MEMBER
Donald J. Ernst, 524 W. Greenfield Ave., Milwaukee, Wis. 53204
Filed May 2, 1974, Ser. No. 466,163
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D11—1 R

240,212
PALLET FOR STORING AND TRANSPORTING TIRES
Emanuel J. Zinna, 28 Holly Drive, Sayville, N.Y. 11782
Filed Dec. 18, 1974, Ser. No. 533,865
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D12—53

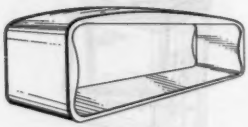
240,213
MOTORCYCLE TRAILER
Robert E. Beckwith, Jr., Elkhart County, Ind., assignor to R & W Associates, Inc., Cassopolis, Mich.
Filed Nov. 7, 1974, Ser. No. 521,566
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—102

240,214
INVALID'S WALKER
Lillie C. Allen, 1821 5th St., Portsmouth, Ohio 45662
Filed Aug. 20, 1975, Ser. No. 606,303
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—130

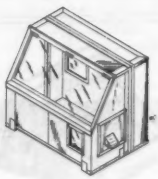
240,215
MUD FLAP FOR TRUCKS
Lowell H. Fox, Fostoria, Ohio, assignor to Roppe Rubber Corporation, Fostoria, Ohio
Filed Feb. 26, 1975, Ser. No. 553,414
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—185



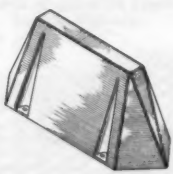
240,216
PREFABRICATED MODULE UNIT FOR HOUSES
Matti Johannes Suuronen, Westend, Finland, assignor to Oy Polykem AB, Helsinki, Finland
Filed Feb. 11, 1974, Ser. No. 441,662
Claims priority, application Finland Aug. 14, 1973
Term of patent 7 years
Int. Cl. D25—*03*
U.S. Cl. D25—35



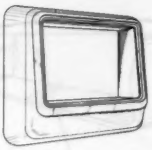
240,217
NOISE REDUCING ENCLOSURE FOR A THREAD POINTER OR THE LIKE
Richard T. Wheeler, 20 Hemlock Drive, Vernon, Conn. 06066
Filed Feb. 28, 1974, Ser. No. 446,817
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—1



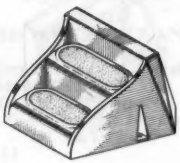
240,218
SUPPORT STAND FOR A DIVING BOARD OR SIMILAR ARTICLE
Carl R. Meyer, 205 Palo Verde Drive, Brownsville, Tex. 78520
Filed Jan. 17, 1975, Ser. No. 541,759
Term of patent 14 years
Int. Cl. O25—*99*
U.S. Cl. D34—45



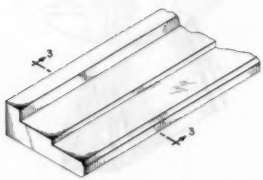
240,219
PREFABRICATED BAY WINDOW UNIT
Isao Kaneko, Iwao Shiina, and Takashi Kato, Tokyo, Japan, assignors to Misawa Homes Institute of Research & Development, Tokyo, Japan
Filed Sept. 30, 1974, Ser. No. 510,706
Claims priority, application Japan Apr. 2, 1974
Term of patent 3½ years
Int. Cl. D25—*02*
U.S. Cl. D25—52



240,220
SUPPORT STAND FOR A DIVING BOARD OR SIMILAR ARTICLE
Carl R. Meyer, 205 Palo Verde Drive, Brownsville, Tex. 78520
Filed Jan. 16, 1975, Ser. No. 541,666
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D34—45

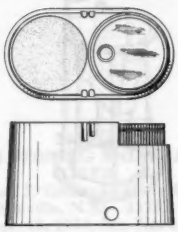


240,221
MOLDING FOR USE AS A DOOR JAMB
Gary A. Hinz, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Mar. 12, 1974, Ser. No. 450,311
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

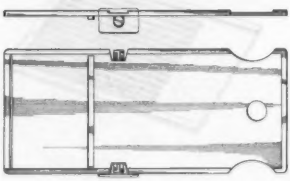


240,222
APPOINTMENT CARD
John W. Cuozzo, Montclair, N.J., assignor to C Co., Glen Ridge, N.J.
Filed July 30, 1974, Ser. No. 493,651
Terms of patent 14 years
Int. Cl. D19—*08*
U.S. Cl. D19—6

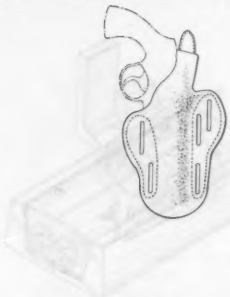
240,223
PENCIL POINTER
Francis W. MacGregor, New Britain, Conn., assignor to Hunt Manufacturing Co., Philadelphia, Pa.
Filed Mar. 3, 1975, Ser. No. 554,576
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—73



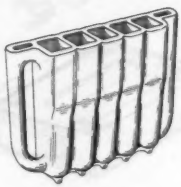
240,224
TELEPHONE INDEX SUPPORT ATTACHABLE TO A TELEPHONE BASE
Irwin H. Schneider, 12 Lee St., Stoneham, Mass. 02180, and Terrance M. Carter, Woodbine Farm, Jaffrey Center, N.H. 03454
Filed July 5, 1974, Ser. No. 485,837
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D19—76



240,225
GUN HOLSTER
Roy L. Baker, Rte. 1, Box 245, Magnolia, Ark. 71753
Filed Feb. 6, 1975, Ser. No. 547,561
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—13

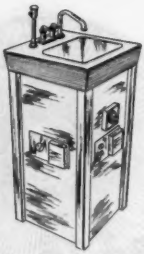


240,226
CARTRIDGE HOLDER
Gerald D. Sjostrand, 4734 E. Home, Fresno, Calif. 93703
Filed Jan. 10, 1975, Ser. No. 540,248
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—14

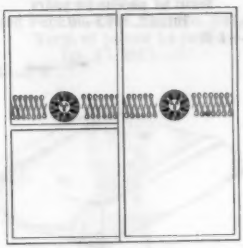


240,227
PRESSURE OPERATED VALVE FOR IRRIGATION SPRINKLERS
Charles J. Flynn, Glendora, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.
Filed Oct. 7, 1974, Ser. No. 512,696
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19

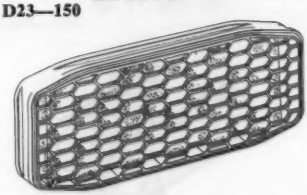
240,228
COMBINED SINK AND UTILITY PEDESTAL OR SIMILAR ARTICLE
William F. Helwig, Jr., Downers Grove, Ill., assignor to Avtec Industries, Incorporated
Filed Dec. 26, 1974, Ser. No. 536,418
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49



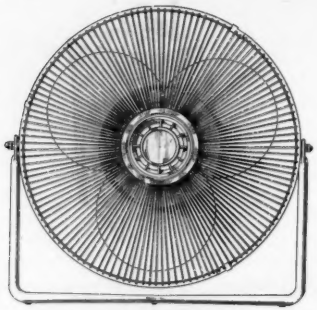
240,229
BATHTUB ENCLOSURE DOOR
George F. Mendenhall, 510 W. Hickory St., Hinsdale, Ill. 60521
Filed July 15, 1974, Ser. No. 488,713
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



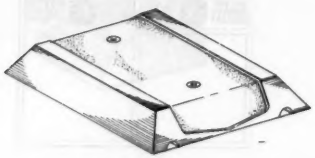
240,230
CONTAINER FOR USE IN DISSEMINATING DEODORANT, RE-ODORANT, AIR-FRESHENING OR INSECTICIDAL VAPORS
Victor Dorsen, London, England, assignor to Shell Oil Company, Houston, Tex.
Filed Feb. 14, 1975, Ser. No. 550,879
Claims priority, application Great Britain Aug. 16, 1974
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



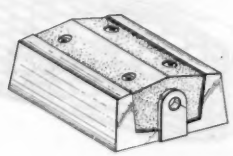
240,231
FAN
Noel Thomas Patton, 8227 Westridge Road, Fort Wayne, Ind. 46825
Filed Jan. 31, 1975, Ser. No. 546,090
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—156



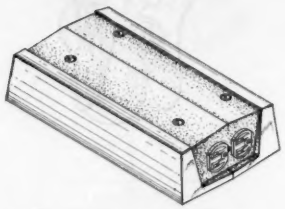
240,232
TELEPHONE OUTLET RECEPTACLE
Edward Dennman Bunnell, Palm Harbor, Fla., assignor to AMP Inc., Harrisburg, Pa.
Filed Jan. 31, 1975, Ser. No. 546,046
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 B



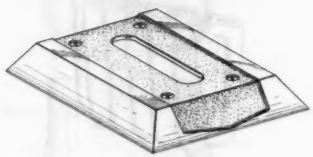
240,233
TELEPHONE OUTLET RECEPTACLE
Edward Dennman Bunnell, Palm Harbor, Fla., assignor to AMP Inc., Harrisburg, Pa.
Filed Jan. 31, 1975, Ser. No. 546,047
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 B



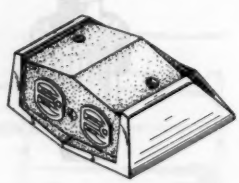
240,234
COMBINED TELEPHONE AND ELECTRICAL OUTLET RECEPTACLE
Edward Dennman Bunnell, Palm Harbor, Fla., assignor to AMP Inc., Harrisburg, Pa.
Filed Jan. 31, 1975, Ser. No. 546,048
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 B



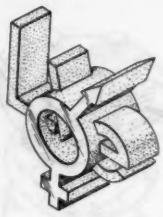
240,235
TELEPHONE OUTLET RECEPTACLE
Edward Dennman Bunnell, Palm Harbor, Fla., assignor to AMP Inc., Harrisburg, Pa.
Filed Jan. 31, 1975, Ser. No. 546,049
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 B



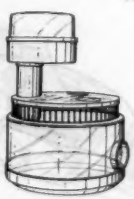
240,236
ELECTRICAL OUTLET RECEPTACLE
Edward Dennman Bunnell, Palm Harbor, Fla., assignor to AMP Inc., Harrisburg, Pa.
Filed Jan. 31, 1975, Ser. No. 546,050
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 B



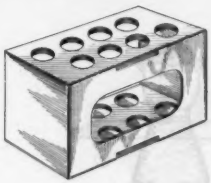
240,237
SCULPTURE OR THE LIKE
Richard E. McVicker, 802 N. Bend Road, Beech Grove, Ind. 46107
Filed Dec. 26, 1974, Ser. No. 536,629
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A

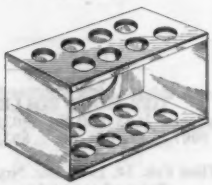


240,238
CAGE FOR SMALL DOMESTIC ANIMALS
Roy Frederick Perkins, Reigate, and John Richard Calvert, Epping, England, assignors to Genyk Products Limited, Mitcham, England
Filed Sept. 19, 1974, Ser. No. 507,501
Claims priority, application Great Britain Apr. 2, 1974
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



240,239
TEST TUBE HOLDER
Michael J. Calandrino, Woodhaven, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 4, 1974, Ser. No. 520,755
Term of patent 14 years
Int. Cl. D6—*04*; D24—*02*
U.S. Cl. D32—1 A



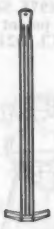


240,240
TOY COW FIGURE
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Feb. 10, 1975, Ser. No. 548,633
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

240,241
TOY HORSE FIGURE
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Feb. 10, 1975, Ser. No. 548,644
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

240,242
TOY LAMB FIGURE
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Feb. 10, 1975, Ser. No. 548,646
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

240,243
TOY HOOP ROLLER
Earl L. Frudeger, 2663 Taft St. 80215, and Donald W. Krengel, 9007 E. Oxford Ave. 80237, both of Denver, Colo.
Filed Feb. 14, 1972, Ser. No. 226,360
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 HP

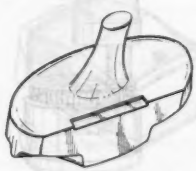


240,244
TENNIS TARGET
Thomas E. Clemmons, Sr., Rte. 11, Box 826, Greensboro, N.C. 27410
Filed Oct. 10, 1973, Ser. No. 405,069
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 PP

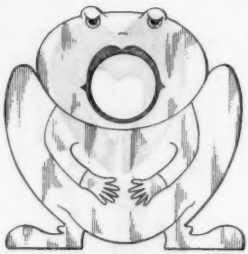
240,245
GOLF PUTTER
Louis Aragona, 11 Scheiber Terrace Cedar Grove, N.J. 07009
Filed May 20, 1974, Ser. No. 471,245
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

240,246
FOOT-BALL GAME TABLE
Rene Pierre, 7 Rue de Paris, Champforgueil, Saone et Loire, France
Filed June 25, 1974, Ser. No. 482,923
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 J

240,247
PUTTER HEAD
Vincent J. Richilano, Lakewood, Ohio, assignor to Zephyr Industries, Inc., Lakewood, Ohio
Filed Aug. 5, 1974, Ser. No. 494,862
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

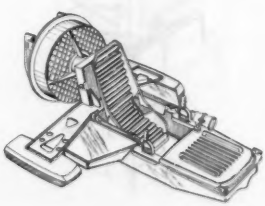


240,248
GAME TARGET
Gerard Andrew Himmelman, 379 Gordons Corner Road, Englishtown, N.J. 07726
Filed Nov. 11, 1974, Ser. No. 522,901
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 PP

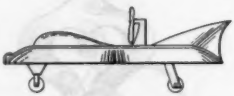


240,249
PUTTER
Edward M. Chellman, 4928 W. 119th St., Hawthorne, Calif. 90250
Filed Dec. 16, 1974, Ser. No. 532,773
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GC

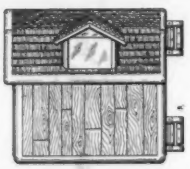
240,250
TOY SWAMP CRAFT
George W. Ptaszek, Pascoag, R.I., assignor to Hasbro Development Corp.
Filed Sept. 9, 1974, Ser. No. 504,657
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



240,251
FLYING SAUCER PULL TOY
Nilson V. Ortiz, San Francisco, Calif., assignor to Nilsec Corporation, San Francisco, Calif.
Filed Oct. 15, 1974, Ser. No. 514,854
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 D



240,252
TOY HOUSE
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Feb. 10, 1975, Ser. No. 548,640
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL



240,253
PLANT STAND
Bobby Lee Crawford, 7711 Old Battle Grove Road, Baltimore, Md. 21222
Filed Mar. 10, 1975, Ser. No. 556,553
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 C

240,254
PENDANT OR SIMILAR ARTICLE
Margaretta C. Roberts, Providence, R.I., assignor to Reed & Barton Corporation, Taunton, Mass.
Filed May 28, 1974, Ser. No. 473,763
Term of patent 3½ years
Int. Cl. D11—*01*
U.S. Cl. D45—16 A

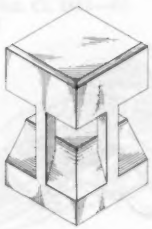
240,255
PENDANT OR THE LIKE
Bonnie H. Richardson, Southington, Conn. (General Delivery, Gloucester, N.C. 28528)
Filed Nov. 2, 1973, Ser. No. 412,148
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—19 G

240,256
PENDANT OR SIMILAR ARTICLE
Margaretta C. Roberts, Providence, R.I., assignor to Reed & Barton Corporation, Taunton, Mass.
Filed May 23, 1974, Ser. No. 472,818
Term of patent 3½ years
Int. Cl. D11—*01*
U.S. Cl. D45—19 L

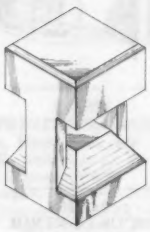
240,257
PENDANT OR SIMILAR ARTICLE
Margaretta C. Roberts, Providence, R.I., assignor to Reed & Barton Corporation, Taunton, Mass.
Filed May 23, 1974, Ser. No. 472,834
Term of patent 3½ years
Int. Cl. D11—*01*
U.S. Cl. D45—19 S

240,258
WALL MOUNTED LIGHTING FIXTURE FOR MIRRORS OR THE LIKE
Guy Vrignaud, Grenoble, France, assignor to Allibert Exploitation, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,490
Claims priority, application France May 6, 1974
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 F

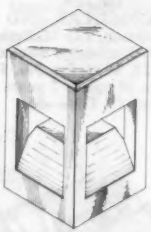
240,259
LIGHTING FIXTURE
Robert E. Walker, Bellevue, and G. Thomas Henderson, Bainbridge Island, Wash., assignors to Cascade Pacific Lumber Co., Inc.
Filed July 17, 1974, Ser. No. 489,375
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



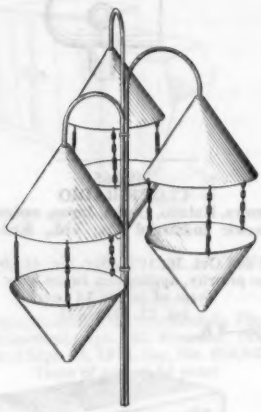
240,260
LIGHTING FIXTURE
Robert E. Walker, Bellevue, and G. Thomas Henderson, Bainbridge Island, Wash., assignors to Cascade Pacific Lumber Co., Inc.
Filed July 17, 1974, Ser. No. 489,376
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



240,261
LIGHTING FIXTURE
Robert E. Walker, Bellevue, and G. Thomas Henderson, Bainbridge Island, Wash., assignors to Cascade Pacific Lumber Co., Inc.
Filed Dec. 5, 1974, Ser. No. 529,806
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

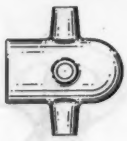


240,262
COMBINED LAMP AND PLANT STAND OR SIMILAR ARTICLE
Benny-Loy Dalgaard-Hansen, Tilburg Alle 20, DK–2792 Store Magleby, Denmark
Filed Jan. 6, 1975, Ser. No. 538,582
Term of patent 14 years
Int. Cl. D11—*02*; D26—*03*
U.S. Cl. D48—31



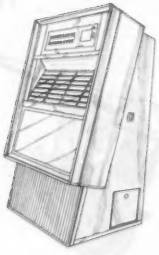
240,263
SPADE BIT
William Southall, deceased, late of Moonah, Tasmania, Australia, by Dorothy L. Southall, administratrix, Moonah, Tasmania, Australia, assignor to The Stanley Works, New Britain, Conn.
Filed Feb. 11, 1974, Ser. No. 441,174
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D54—4

240,264
AERATOR FOR A SEWAGE SYSTEM
David S. MacLaren, 21176 Brantley Road, Shaker Heights, Ohio 44120
Original design application Apr. 17, 1974, Ser. No. 461,493, now Patent No. 237,007, which is a continuation of abandoned design application Ser. No. 276,078, July 28, 1972. Divided and this application May 12, 1975, Ser. No. 576,452
Term of patent 14 years
Int. Cl. D15—*99*; D23—*01*
U.S. Cl. D55—1 D



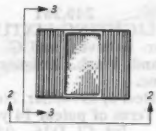
240,265
CLOCK RADIO
Ken Kawamura, Katano, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Oct. 30, 1973, Ser. No. 411,071
Claims priority, application Japan May 7, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

240,266
COIN OPERATED PHONOGRAPH
Robert A. O'Neil and Michael C. Wilson, Glen Ellyn, Ill., assignors to The Seeburg Corporation of Delaware, Chicago, Ill.
Filed Aug. 13, 1974, Ser. No. 497,115
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



240,267
PIANO
Winsor D. White, Jr., Chicago, Ill., and Dennis Barket, Cincinnati, Ohio, assignors to D. H. Baldwin Company, Cincinnati, Ohio
Filed Aug. 26, 1974, Ser. No. 500,398
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9

240,268
ZOOM OR FOCUS CONTROL KNOB FOR BINOCULAR
Claus O. Huckenbeck, Sherman Oaks, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jan. 2, 1975, Ser. No. 538,088
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—59

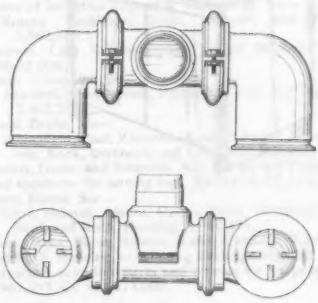


240,269
COMBINED BINOCULAR AND COMPASS
Nils Viktor Johansson, 123 Maltesholmsvagen, 162 37 Vallingby, Sweden
Filed Mar. 21, 1975, Ser. No. 560,699
Term of patent 7 years
Int. Cl. D16—*06*
U.S. Cl. D16—59

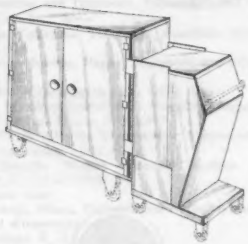
240,270
RADIO RECEIVER WITH CLOCK
Takeyoshi Kawano, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Jan. 10, 1975, Ser. No. 540,270
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D56—4 B

240,271
PRINTER HAMMER
Paul L. Boumann, Pleasanton, and Herbert R. Beaven, Los Altos, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Aug. 1, 1974, Ser. No. 493,799
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—11 R

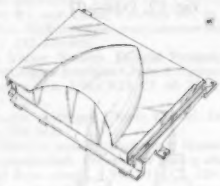
240,272
PUMP MANIFOLD
George M. Philpott, 43–485 Tennessee, Palm Desert, Calif. 92260
Filed May 28, 1974, Ser. No. 473,704
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1 R



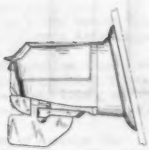
240,273
COMBINED DIETARY MODULE AND REFRIGERATION UNIT AND SUPPORTING FRAMES THEREFOR
James H. Patrie, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.
Filed Sept. 12, 1973, Ser. No. 396,422
Term of patent 14 years
Int. Cl. D12—*02*; D15—*07*
U.S. Cl. D67—3 R



240,274
ROOF TILE
Peter Markos, Fort Lauderdale, Fla. (5440 N. Braeswood, Apt. 962, Houston, Tex. 77096)
Filed Sept. 18, 1974, Ser. No. 506,947
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80

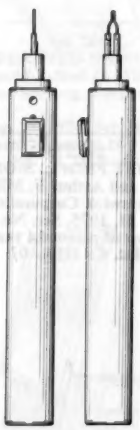


240,275
MARINE JET PROPULSION DRIVE
William L. Woodfill and Arthur F. Miller, Oshkosh, Wis., assignors to Brunswick Corporation, Skokie, Ill.
Filed July 21, 1975, Ser. No. 597,967
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1 R



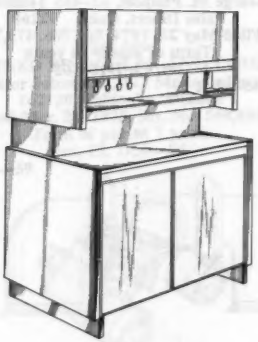
240,276
MEDICAL ELECTRODE
James Vernon Cartmell and Edwin Charles Beck, Dayton, Ohio, assignors to NDM Corporation
Filed Jan. 13, 1975, Ser. No. 540,653
Term of patent 14 years
Int. Cl. D24—*01, 99*
U.S. Cl. D83—1 F

240,277
CAUTERY
David E. Staub, Clearwater, Fla., assignor to Concept, Inc.
Filed July 12, 1974, Ser. No. 488,181
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



240,278
VITREOUS CUTTER
David E. Staub, Clearwater, Carl L. Foltz, Holiday, and Raymond W. Simmons, Pinellas Park, Fla., assignors to Concept, Inc.
Filed Dec. 12, 1974, Ser. No. 531,967
Term of patent 14 years
Int. Cl. D8—*01;* D24—*02*
U.S. Cl. D83—12 R

240,279
LIQUID REFRESHMENT DISPENSING CABINET
Melvin H. Boldt, Glenview, and Thurber H. Morrison, Evanston, Ill., assignors to Canteen Corporation, Chicago, Ill.
Filed Mar. 5, 1975, Ser. No. 555,545
Term of patent 14 years
Int. Cl. D6—*04;* D20—*01*
U.S. Cl. D94—3 A



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF JUNE, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A & P Products Incorporated: *See—*
Venaleck, John T.; and Tengler, John N., 3,961,834.

A/S Akers Mek. Verksted: *See—*
Ovsttun, Torbjorn, 3,961,488.

A-T-O Inc.: *See—*
Dimond, George H., deceased; and Jensen, Frederick C., executor, 3,961,463.

AB Lectrostatic: *See—*
Alskog, Magnus, 3,961,924.

AB Volvo: *See—*
Lineberg, Birger David, 3,961,777.

AB Ziristor: *See—*
Stark, Olof; and Martensson, Kjell, 3,961,742.

Abbas, Shakir A.; Dockerty, Robert C.; and Poponiak, Michael R., to International Business Machines Corporation. Process for forming apertures in silicon bodies. 3,962,052, Cl. 204-129.300.

Abbott Laboratories: *See—*
Liston, Max Davis; and Frison, Gerald Paul, 3,962,085.

Abe, Kuniomi: *See—*
Fukuda, Susumu; and Abe, Kuniomi, 3,961,956.

Abe, Takeshi, to Ricoh Co., Ltd. Utility meter reading system using telephone line. 3,962,545, Cl. 179-2.0AM.

Abercrombie, William F., Jr.; Trowbridge, Frank R.; and McCook, Norman Lary, to J. M. Huber Corporation. Method for improving brightness of kaolinite clays including iron pyrites. 3,961,971, Cl. 106-72.000.

Abercrombie, William F., Jr., to J. M. Huber Corporation. Method for controlling the viscosity of dispersed clay slurries. 3,961,979, Cl. 106-308.00N.

Abkowitz, Martin A.: *See—*
Pfister, Gustav R.; Williams, David J.; and Abkowitz, Martin A., 3,961,954.

Abu El-Haj, Marwan J.; and Dominy, Beryl William, to Pfizer Inc. Process for making 2-amino nicotinonitrile. 3,962,264, Cl. 260-294.900.

Achsel, Eberhard; Hortig, Hans-Peter; Seipp, Heinrich; and Giller, Heinz, to Hoechst Aktiengesellschaft. Process for the purification of terephthalic acid dimethyl ester. 3,962,315, Cl. 260-475.00B.

Achter, Meyer R.; and Griffith, James R., to United States of America, Navy. Coating composition for suppressing combustion of titanium metal. 3,961,964, Cl. 106-15.0FP.

Acieries Thome Cromback: *See—*
Thome, Michel, 3,961,994.

Ackerman, Roy Alan: *See—*
Fialkoff, Sheldon L.; and Ackerman, Roy Alan, 3,962,075.

Adachi, Eiichi: *See—*
Mori, Hisayuki; Adachi, Eiichi; and Noguchi, Yoji, 3,962,390.

Adams, Howard C. Prefabricated insulation panel. 3,961,454, Cl. 52-527.000.

Adams, James K.: *See—*
Adams, James R.; and Adams, James K., 3,961,671.

Adams, James R.; and Adams, James K. Earth anchor drive process. 3,961,671, Cl. 173-1.000.

Adolph, Horst G., to United States of America, Navy. 2,2,2-Fluorodinitroethyl 2-nitroalkyl acetals and methods of preparation. 3,962,349, Cl. 260-615.00A.

Adolphi, Heinrich: *See—*
Kiehs, Karl; Huber, Rolf; and Adolphi, Heinrich, 3,962,316.

Advanced Materials Systems, Inc.: *See—*
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Aerojet-General Corporation: *See—*
Steele, Roger B.; Katzakian, Arthur, Jr.; Scigliano, Joseph J.; and Hamel, Edward E., 3,962,182.

Aeronutronic Ford Corporation: *See—*
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Agence National de Valorisation de la Recherche (ANVAR): *See—*
Wattiez, Daniel; Chatelin, Roger; and Fabre, Paul, 3,962,054.

Agency of Industrial Science & Technology: *See—*
Kotera, Yoshihide; Todo, Naoyuki; and Fukuda, Kenzo, 3,962,409.

Aggarwal, Lalit K. Phonograph record insulator. 3,961,656, Cl. 150-52.00R.

Aglietti, Giancarlo: *See—*
Antonelli, Giambattista; Ferlazzo, Natale; and Aglietti, Giancarlo, 3,962,286.

Ahland, Erwin: *See—*
Schmalfeld, Paul; Rammler, Roland; Peters, Werner; Ahland, Erwin; Bock, Burkhard; and Lehmann, Joachim, 3,962,043.

Ahlenius, Gosta; and Svensson, Ake, to Mo och Domsjo AB. Method and apparatus for turning logs. 3,961,698, Cl. 198-25.000.

Ahrens, Hanns: *See—*
Biere, Helmut; Ahrens, Hanns; Rufer, Clemens; Schroder, Eberhard; and Koch, Henning, 3,962,471.

Ahrens, Hans; Biere, Helmut; Rufer, Clemens; Schroder, Eberhard; and Koch, Henning, to Schering Aktiengesellschaft. Novel pyrazolyloxyacetic acid derivatives and process for the preparation thereof. 3,962,453, Cl. 424-273.000.

Aigami, Koji; and Inamoto, Yoshiaki, to Kao Soap Co., Ltd. Adamantyl thioamides. 3,962,328, Cl. 260-551.00S.

Air Products and Chemicals, Inc.: *See—*
Jones, John Paul, Jr., 3,961,599.

Airco, Inc.: *See—*
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Airwick Industries, Inc.: *See—*
Hennart, Claude; and Dulat, Marcel Louis, 3,962,415.

Aisin Chemical Company, Limited: *See—*
Sato, Tadashi; Yamamoto, Yasunobu; Mizutani, Iwao; Yoshimi, Shigemitsu; and Teramoto, Tsutomu, 3,962,491.

Ajinomoto Co., Inc.: *See—*
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Uchiyama, Noboru; Nagao, Masanori; and Mizoguchi, Naomasa, 3,962,207.

Akademie der Wissenschaften der DDR: *See—*
Richter, Manfred; Schierbaum, Friedrich; Augustat, Siegfried; and Knoch, Klaus-Dieter, 3,962,465.

Akademiet for de tekniske Videnskaber, Svejsecentralen: *See—*
Northeved, Allan, 3,961,621.

Akahane, Shoichi. Whole spherical surface polishing device. 3,961,448, Cl. 51-117.000.

Akitsuki, Ikuo: *See—*
Itoh, Takuji; Miura, Tadashi; and Akitsuki, Ikuo, 3,962,071.

Aktiebolaget Atomenergi: *See—*
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Akutagawa, Susumu: *See—*
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Aladdin Industries, Incorporated: *See—*
Potter, Gordon W., Jr., 3,961,720.

Alafandi, Hamid Abdel, to Filtrol Corporation. Shaped catalyst support. 3,962,135, Cl. 252-450.000.

Alberts, Heinrich; Bartl, Herbert; Prinz, Richard; Elghani, Salah Elabd; and Fischer, Winfried, to Bayer Aktiengesellschaft. Weather-resistant thermoplasts. 3,962,371, Cl. 260-876.00R.

Albrecht, William C.; and Clark, David L., to General Motors Corporation. Vehicle bucket seat apparatus and assembly method therefor. 3,961,767, Cl. 248-503.000.

Albrecht, William L.; and Fleming, Robert W., to Richardson-Merrell Inc. Carbazole derivatives. 3,962,451, Cl. 424-267.000.

Alcorn, William R.; and Cullo, Leonard A., to Harshaw Chemical Company, The. Nickel-copper-molybdenum methanation catalyst. 3,962,140, Cl. 252-470.000.

Alderson, John Victor; Stanley, Donald Frederick; and Rudd, John Duncan, to Pilkington Brothers Limited. Apparatus and method for moulding glass objects. 3,961,927, Cl. 65-25.00R.

Aldinger, Ulrich: *See—*
Kersten, Gunter; Aldinger, Ulrich; Knodel, Emil; and Knoblauch, Rainer, 3,961,562.

Alfter, Franz Werner; and Breitscheidel, Hans-Ulrich, to Dynamit Nobel Aktiengesellschaft. Process for joining abutting thermoplastic synthetic-resin foam sheets. 3,962,016, Cl. 156-304.000.

Allen-Bradley Company: *See—*
Zunft, Donald V.; Weidmann, Siegfried; and Trendel, Dennis J., 3,962,658.

Allen, Lindsay Alfred, to IWS Nominee Co. Ltd.; and Commonwealth Scientific and Industrial Research Organization. Production of yarn. 3,961,471, Cl. 57-140.00J.

Allied Chemical Corporation: *See—*
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Byrne, Michael F.; and Powelson, Douglas V. N., 3,961,814.
Marshall, Robert Moore; and Dardoufas, Kimon Constantine, 3,962,516.
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von Dohlen, Henry Claus; and Burt, Wallace Allison, 3,961,708.

Alliot, Maurice; Beguin, Jean-Claude; Moutach, Michel; and Percheron, Jean-Claude, to Aluminum Pechiney. Mother alloy of aluminum, titanium and boron and process for fabrication. 3,961,995, Cl. 148-32.000.

Allis-Chalmers Corporation: *See—*
Gilmore, Thomas P.; and Moore, David L., 3,961,546.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
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Alskog, Magnus, to AB Lectrostatic. Filter device. 3,961,924, Cl. 55-500.000.

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Alza Corporation: *See—*
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Amax Resource Recovery Systems, Inc.: *See—*
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Amemiya, Akira: *See—*
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Amerace Corporation: *See—*
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American Carrier Equipment, Inc.: *See—*
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American Cyanamid Company: *See—*
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American Hoechst Corporation: *See—*
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American Home Products Corporation: *See—*
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Anderson, Clifford J.: *See—*
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Anderson, Gordon Wood; Davey, John E.; and Grant, Howard L., to United States of America, Navy. Method for forming uniform stress-free thin films. 3,962,485, Cl. 427-9.000.

Anderson, Ray C. Energy converting hydraulic buoyant motor. 3,961,479, Cl. 60-496.000.

Anderson, Robert P.: *See—*
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Andis Clipper Company: *See—*
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Ando, Kunio: *See—*
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Andreoff, Gerald F. Battery cover. 3,961,988, Cl. 136-181.000.

Anheuser-Busch, Incorporated: *See—*
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Ankerfarm, S.p.A.: *See—*
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Cotti, Gino, 3,962,331.

Annesser, Richard J.; and Klett, Robert J., to Chevron Research Company. Process for the removal of sulfur oxides from waste gases. 3,962,405, Cl. 423-242.000.

Anselmo, Robert A.: *See—*
Priel, Ury; and Anselmo, Robert A., 3,962,589.

Anspach, Ralph, to Anti-Monopoly, Inc. Antitrust prosecuting board game. 3,961,795, Cl. 273-134.0AD.

Anti-Monopoly, Inc.: *See—*
Anspach, Ralph, 3,961,795.

Antipov, Igor, to International Business Machines Corporation. Method for forming recessed dielectric isolation with a minimized "bird's beak" problem. 3,961,999, Cl. 148-175.000.

Antonelli, Giambattista; Feriazzo, Natale; and Aglietti, Giancarlo, to Societa' Italiana Resine S.I.R. S.p.A. Catalytic process for preparing ethylene oxide by oxidation of ethylene. 3,962,286, Cl. 260-348.50R.

Antos, George, to Universal Oil Products Company. Hydrocarbon conversion process. 3,962,035, Cl. 195-27.000.

Anzai, Masao: *See—*
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Aono, Toshiaki: *See—*
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Arai, Atsuaki: *See—*
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Araki, Michiya: *See—*
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Araki, Shigehito: *See—*
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Archibald, John Leheup; Jackson, John Lambert; and Bushell, Brian John, to John Wyeth & Brother Limited. 1,2,3,4,6,7,12,12b-Octahydro-2-benzamidoindolo[2,3-a]quinolizine. 3,962,258, Cl. 260-293.530.

Arhart, Richard James, to Du Pont de Nemours, E. I., and Company. Stabilized quick set adhesives. 3,962,372, Cl. 260-878.00R.

Arico, Larry L. Bicycle safety and conversion wheel. 3,961,810, Cl. 280-239.000.

Arlt, Dieter, to Bayer Aktiengesellschaft. Process for preparing 2-vinyl oxazolines. 3,962,270, Cl. 260-307.00F.

Armco Steel Corporation: *See—*
Crow, Harold E.; and Brown, Edward L., 3,961,769.

Armor Elevator Company: *See—*
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Armstrong, Douglas, to Coulter Diagnostics, Inc. Multi-purpose diluent for use in blood analysis by electronic instrumentation of the coulter type. 3,962,125, Cl. 252-408.000.

Arnold, Randall K., to Alza Corporation. Ocular drug dispensing system. 3,961,628, Cl. 128-260.000.

Arnoldussen, Theodorus Franciscus; Hocks, Antonius Johannes Ludovicus Maria; and Liebrand, Norbertus Johannes Josephus, to U.S. Philips Corporation. Magazine for X-ray film sheets, comprising a rotatable storage drum. 3,961,760, Cl. 242-67.30R.

Arruda, Paul Jeffrey; and Barber, Charles Launcelot, Jr., to Du Pont de Nemours, E. I., and Company. Fluoroelastomer latex containing lithium ion and a creaming agent and process for preparation thereof. 3,962,169, Cl. 260-29.60F.

Arthur G. Russell Company, Incorporated, The: *See—*
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Arvin Hong Kong Ltd.: *See—*
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Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Kohno, Mitsuo; Igarashi, Tsuneo; and Nomura, Minoru, 3,962,183.

Asam, Adolf R., to International Telephone and Telegraph Corporation. Preparation of germania cores in optical fibers. 3,961,926, Cl. 65-3.00A.

Asano, Shiro: *See—*
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Asano, Yoichi: *See—*
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Associated Mills, Inc.: *See—*
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Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Analgesic compositions containing 2-cyanoalkylbenzomorphan derivatives and salts thereof. 3,962,446, Cl. 424-260.000.

Aubert, Richard C.; Dean, George R.; Ricks, James B.; and Wade, John W., to Bell & Howell Company. Power supply for an audio-video recording system. 3,962,532, Cl. 178-5.600.

Augustat, Siegfried: *See—*
Richter, Manfred; Schierbaum, Friedrich; Augustat, Siegfried; and Knoch, Klaus-Dieter, 3,962,465.

Aumuller, Walter: *See—*
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Avery, Theodore P. Plastic contact lens with magnetic embedded metal ring. 3,962,505, Cl. 428-65.000.

Ayerst McKenna and Harrison Ltd.: *See—*
Demerson, Christopher A.; Humber, Leslie G.; Santroch, George; Dobson, Thomas A.; and Jirkovsky, Ivo, 3,962,236.

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Bach, Nicholas J.: *See—*
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Bachmann, William E.; and Flatt, Thomas R., to Allied Chemical Corporation. Preparation of flavanthrone pigment. 3,962,251, Cl. 260-273.000.

Bader, Eberhard, to Motoren- und Turbinen-Union Munchen GmbH. Control means for jet aircraft thrust reversing means. 3,961,560, Cl. 91-358.00R.

Badini, John R.: *See—*
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Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
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Baile, Clifton A.; Bender, Paul E.; and Loev, Bernard, to SmithKline Corporation. 8-Alkyl and alkenyl-10-hydroxy-5H[1]benzopyranopyridine derivatives having polyphagic activity. 3,962,448, Cl. 424-263.000.

Bailey, Ronald L.; Muhler, Joseph C.; and Putt, Mark S. Tooth testing system and machine. 3,961,521, Cl. 73-7.000.

Baker, Preston G., Jr.: *See—*
Vits, Helmuth; and Baker, Preston G., Jr., 3,961,882.

Baker, Richard D.; Cottam, Stephen M.; Day, Howard E.; and Griffith, William A., to Hecla Mining Company. Method of producing metallic lead and silver from their sulfides. 3,961,941, Cl. 75-101.00R.

Baker, Ronald L., to Lutes, Thomas G., a part interest. Dental handpiece control. 3,961,640, Cl. 137-87.000.

Baker, William, to Tennelec, Inc. Crystalless scanning radio receiver controlled by processing means. 3,962,644, Cl. 325-470.000.

Bako, Lazlo: *See—*
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Baladjanian, Gregor; and Clark, Eugene V., to Chromalloy American Corporation. Rhodium-containing superalloy coatings and methods of making same. 3,961,910, Cl. 29-197.000.

Balentine, George H., Jr. Apparatus for heat treating fabric at the loom. 3,961,651, Cl. 139-291.00R.

Balevski, Angel Tonchev; Nikolov, Ivan Dimov; Nenov, Dragan Iliev; and Momchilov, Emil Nikolov, to Institut po Metaloznanie i Technologia na Metalite. Method for controlling the rate of filling of casting molds. 3,961,662, Cl. 164-4.000.

Balhorn, Milo G., to Old Fort International, Inc. Sound insulated block molding machine. 3,961,874, Cl. 425-211.000.

Bandoch, Rudolf: *See—*
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Bar Productions (Bromsgrove) Limited: *See—*
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Barber, Charles Launcelot, Jr.: *See—*
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Barber, Donald B.; Everett, Paul L.; Nou, Ivar; Struebing, James; and Greenbecker, William, to Barber-Webb. Resilient liner for an electrolytic cell. 3,962,066, Cl. 204-279.000.

Barber, Loren L., Jr.; and Koshar, Robert J., to Minnesota Mining and Manufacturing Company. 1,1-Bis(perfluoroalkylsulfonyl)ethenes. 3,962,346, Cl. 260-607.00A.

Barber-Webb: *See—*
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Barnhart, Victor J.: *See—*
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Barry, Robert D., to Wer Industrial Division of Emerson Electric Co. Polyphase AC motor control. 3,962,613, Cl. 318-225.00R.

Bartl, Herbert: *See—*
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Bartley, Thomas S., to International Paper Company. Industrial building structure system. 3,961,712, Cl. 212-5.000.

Bartz, Gunter, to Ernst Leitz G.m.b.H. Method of imparting contrast to a microscope object. 3,962,057, Cl. 204-164.000.

BASF Aktiengesellschaft: *See—*
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Basile, Peter A., to Amerace Corporation. Retainer for securing operating elements to control shafts. 3,961,855, Cl. 403-329.000.

Basset, Jean-Claude, to Telecommunications Radioelectriques et Telephoniques T.R.T. Arrangement for simultaneously producing signals having an increasing frequency and signals having a decreasing frequency. 3,962,653, Cl. 331-2.000.

Bata Shoe Company, Inc.: *See—*
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Bates, Harold M., to Center for Laboratory Medicine. Analytical procedure for thyroid hormones. 3,962,039, Cl. 195-103.50R.

Bauer, Donald J.: *See—*
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Bauer, Paul: *See—*
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Bauer, Victor J.; and Kosley, Raymond W., Jr., to American Hoechst Corporation. 1,3-Dihydrospiro[isobenzofuran]s and derivatives thereof. 3,962,259, Cl. 260-293.580.

Bayer Aktiengesellschaft: *See—*
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BDH, Inc.: *See—*
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Beard, Colin C., to Syntex (U.S.A.) Inc. 5(6)-Benzene ring substituted benzimidazole-2-carbamate derivatives having anthelmintic activity. 3,962,437, Cl. 424-246.000.

Beatrice Foods Company: *See—*
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Beaudoin, John F., to Pratt Manufacturing Corporation. Endless belt folder. 3,961,783, Cl. 270-66.000.

Beaumont, Pierre: *See—*
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Beauvent, Guy; and Roy, Jacques, to Centre de Recherche Industrielle du Quebec. Frost detecting device for a refrigeration apparatus. 3,961,495, Cl. 62-140.000.

Beavens, Charles R.; and Higgs, Kenneth O., to Texaco Inc. Alkylation acid end point detector. 3,961,901, Cl. 23-253.00R.

Becke, Friedrich; and Fleig, Helmut, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. α-Hydroxy-β-aminocarboxylic acids. 3,962,319, Cl. 260-514.00J.

Beckman, Frank H.: *See—*
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Beckman Instruments, Inc.: *See—*
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Beecham Group Limited: *See—*
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Beer, Heinrich: *See—*
Rusch, Werner; Beer, Heinrich; Seeger, Veronika; and Waibel, Manfred, 3,962,519.

Beers, Melvin D.; Berger, Abe; Hamilton, Stephen B.; and Selin, Terry G., to General Electric Company. Novel organofunctional (ketoximino) silanes and room temperature, vulcanizable compositions containing the same. 3,962,160, Cl. 260-18.00S.

Begland, Robert Walter, to Du Pont de Nemours, E. I., and Company. Preparation of disperse bisanil dyes derived from diaminomaleonitrile. 3,962,220, Cl. 260-240.00G.

Begland, Robert Walter, to Du Pont de Nemours, E. I., and Company. Preparation of disperse bisanil dyes derived from diaminomaleonitrile. 3,962,221, Cl. 260-240.00G.

Beguin, Jean-Claude: *See—*
Alliot, Maurice; Beguin, Jean-Claude; Moutsch, Michel; and Percheron, Jean-Claude, 3,961,995.

Bell & Howell Company: *See—*
Aubert, Richard C.; Dean, George R.; Ricks, James B.; and Wade, John W., 3,962,532.

Bell, Richard Charles: *See—*
Droege, Arthur John, Sr.; and Bell, Richard Charles, 3,961,868.
Droege, Arthur John, Sr.; and Bell, Richard Charles, 3,961,869.

Bell Telephone Laboratories, Incorporated: *See—*
Haskell, Barin Geoffry, 3,962,535.
Kane, Jack; and Pedersen, Richard Alan, 3,962,590.
Petroff, Pierre Marc; and Rozgonyi, George Arthur, 3,962,716.
Seidel, Harold, 3,962,541.

Belle Isle, Albert P., to General Electric Company. Data processing system having pyramidal hierarchy control flow. 3,962,685, Cl. 340-172.500.

Beloit Corporation: *See—*
Fujiwara, Haruyoshi, 3,961,759.

Belton, Annette M.: *See—*
Faubl, Hermann; and Belton, Annette M., 3,962,131.

Belz, Ray J.: *See—*
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Bemis Company, Inc.: *See—*
Wolske, Eugene H., 3,961,459.

Bemis, Richard A.: *See—*
Gilbert, Curtiss M.; Bemis, Richard A.; and Schulze, Norman D., 3,962,048.

Bender, Paul E.: *See—*
Baile, Clifton A.; Bender, Paul E.; and Loev, Bernard, 3,962,448.

Bendix Corporation, The: *See—*
Richman, Jay L., 3,962,647.
Scardilli, Vincent; and Sussman, Arthur, 3,962,008.

Shimrony, Yoram, 3,961,604.
Benedict, Manson; Fruit, Allen J.; and Levey, Horace B., to United States of America, Energy Research and Development Administration. Method of independently operating a group of stages within a diffusion cascade. 3,961,917, Cl. 55-16.000.
Benko, James J.: *See—*
Oberhofer, Alfred W.; Benko, James J.; and Drozd, Joseph C., 3,962,109.
Benkoe, Erwin: *See—*
Goldfarb, Adolph E.; and Benkoe, Erwin, 3,961,794.
Bennett, Gregory Benjamin, to Sandoz, Inc. Process for the preparation of furo(3,4-e)-as-triazines. 3,962,240, Cl. 260-248.0AS.
Bennett, Milton C., to J. I. Case Company. Differential fluid-pressure transducer. 3,961,533, Cl. 73-419.000.
Bennett, Moreland P.; and Hobbs, Albert M., Jr., to General Electric Company. Metal welding gasket. 3,962,662, Cl. 336-90.000.
Bennett, Richard C., to Whiting Corporation. Crystallization apparatus. 3,961,904, Cl. 23-273.00R.
Bennett, Russell B.: *See—*
Dulin, Jacques M.; Rosar, Edward C.; Bennett, Russell B.; Rosenberg, Harvey S.; and Genco, Joseph M., 3,962,080.
Bennett, Thomas H., to Motorola, Inc. Split low order internal address bus for microprocessor. 3,962,682, Cl. 340-172.500.
Benninger, Siegfried; Martini, Thomas; and Rebsdat, Siegfried, to Hoechst Aktiengesellschaft. Aliphatic and cyclic perfluoro-alkyl ethers and process for the preparation thereof. 3,962,348, Cl. 260-615.00F.
Beno, Ferdinand. Toilet seat cover. 3,961,386, Cl. 4-247.000.
Berardinelli, Frank M., to Celanese Corporation. Polyalkylene terephthalate polymer molding resins. 3,962,174, Cl. 260-40.00R.
Bergen, Richard F., to Xerox Corporation. Imaging system. 3,961,950, Cl. 96-1.100.
Berger, Abe: *See—*
Beers, Melvin D.; Berger, Abe; Hamilton, Stephen B.; and Selin, Terry G., 3,962,160.
Berger, Herbert; Gall, Rudi; Thiel, Max; Vomel, Wolfgang; and Sauer, Winfriede, to Boehringer Mannheim G.m.b.H. 3-(5-Nitro-2-furyl)-6-cyano-s-triazolo(4,3-b)pyridazine. 3,962,242, Cl. 260-250.0AC.
Berggren, Torsten Lennart, to Cellwood Machinery AB. Method and machine for refining wood chippings, shavings, paper pulp and the like. 3,961,757, Cl. 241-28.000.
Berglund, Harold A.: *See—*
Thomas, David F.; and Berglund, Harold A., 3,961,642.
Bergwerksverband GmbH: *See—*
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; Zundorf, Dieter; and Horbel, Hugo, 3,962,129.
Schmalfeld, Paul; Rammler, Roland; Peters, Werner; Ahland, Erwin; Bock, Burkhard; and Lehmann, Joachim, 3,962,043.
Berkoff, Charles E.; Sutton, Blaine M.; and Weinstock, Joseph, to SmithKline Corporation. Anti-arthritic 1H-pyrimido-(5,4,3-kl)phenothiazine-1,3(2H)-diones and 1-thiones. 3,962,438, Cl. 424-247.000.
Berkowitz, Daniel: *See—*
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Berlanga, Jose Maria Castellano: *See—*
Roldan, Cristobal Martinez; Brana, Miguel Fernandez; and Berlanga, Jose Maria Castellano, 3,962,243.
Berman, Valerian Mikhailovich: *See—*
Dokukin, Alexandr Viktorovich; Tyablikov, Jury Evgenievich; Rogov, Anatoly Yakovlevich; Berman, Valerian Mikhailovich; Nikitin, Jury Arsentievich; and Feifets, Leonid Solomonovich, 3,961,558.
Bernard, Claude. Shelving. 3,961,586, Cl. 108-111.000.
Bernert, Claus-Rudiger; and Radlmann, Eduard, to Bayer Aktiengesellschaft. Antistatic polyamide compositions which are stabilized against yellowing. 3,962,176, Cl. 260-45.70R.
Berninger, John F.: *See—*
Rich, Beldon R.; Gallagher, Richard J.; and Berninger, John F., 3,961,564.
Berniolles, Jean-Marie; and Gallo, Sabino, to Commissariat a l'Energie Atomique. Fast nuclear reactor. 3,962,032, Cl. 176-65.000.
Berreth, Julius R., to United States of America, Energy Research and Development Administration. Method for solidifying liquid radioactive wastes. 3,962,114, Cl. 252-301.10W.
Berry, Thomas: *See—*
Ferrier, Duncan Cameron; Berry, Thomas; and Murenbeeld, Karel, 3,961,401.
Ferrier, Duncan Cameron; Berry, Thomas; and Murenbeeld, Karel, 3,961,402.
Bertele, Erhard; and Schudel, Peter, to Givaudan Corporation. Terpene flavorant intermediates. 3,962,283, Cl. 260-340.900.
Best, Desmond John: *See—*
Ferres, Harry; Kemmenoe, Adrian Victor; and Best, Desmond John, 3,962,216.
Best, Ralph E.: *See—*
Dufrane, Kenneth H.; Rollins, Jack D.; Best, Ralph E.; Barnhart, Victor J.; Anderson, Clifford J.; Cox, Thomas H.; and Riggs, Robert R., 3,962,587.
Betensky, Ellis I., to Optigon Research & Development Corporation. Lens. 3,961,844, Cl. 350-175.0FS.
Betz Laboratories, Inc.: *See—*
Swered, Paul; and Shema, Bernard F., 3,962,456.
BICC Limited: *See—*
Verne, Stefan, 3,962,517.
Biebuyck, Lawrence F.: *See—*
Hubbard, S. Eugene; and Biebuyck, Lawrence F., 3,961,452.
Bied-Charreton, Philippe; d'Auria, Luigi; Micheron, Francois; and Huignard, Jean Pierre, to Thomson-CSF. Magnetically actuated deflectable membrane page composer for holography. 3,961,837, Cl. 350-3.500.
Biere, Helmut; Ahrens, Hanns; Rufer, Clemens; Schroder, Eberhard; and Koch, Henning, to Schering Aktiengesellschaft. Indolylacetylamino acid derivatives, process for their preparation, and pharmaceutical compositions. 3,962,471, Cl. 424-274.000.
Biere, Helmut: *See—*
Ahrens, Hans; Biere, Helmut; Rufer, Clemens; Schroder, Eberhard; and Koch, Henning, 3,962,453.
Bigelow-Sanford, Inc.: *See—*
Vits, Helmuth; and Baker, Preston G., Jr., 3,961,882.
Billington, Colin: *See—*
Jago, John James; and Billington, Colin, 3,961,928.
Binnig, Fritz; Raschack, Manfred; and Treiber, Hans-Joerg, to Knoll A.G. Chemische Fabriken. Cardioactive bispidones and bispidines. 3,962,449, Cl. 424-267.000.
Birke, Walter; Schon, Franz; and Steckelberg, Willi, to Hoechst Aktiengesellschaft. Process for the dyeing of synthetic fibrous materials from organic solvents using azo dyes. 3,961,885, Cl. 8-41.00A.
Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, to Hoechst Aktiengesellschaft. Process and auxiliary agent for improving the wettability of textile material. 3,961,889, Cl. 8-115.500.
Birkofer, Roger Clarence, to Procter & Gamble Company, The. Mild thickened shampoo compositions with conditioning properties. 3,962,418, Cl. 424-70.000.
Bis, Richard F.: *See—*
Scharnhorst, Kurt Peter; Bis, Richard F.; Dixon, Jack R.; Houston, Bland B., Jr.; Brown, Richard W.; and Riedl, Harold R., 3,961,998.
Bishop, David Paul; and Morris, Ronald Meredith, to Lever Brothers Company. Textile softening agents. 3,961,892, Cl. 8-190.000.
Blackwelders: *See—*
Schmidt, Lewis W., 3,961,573.
Blad, Leiv H., to Lockheed Aircraft Corporation. Method for making a hollow laminated article. 3,962,393, Cl. 264-90.000.
Blaho, Rudolph G.: *See—*
Brilando, Frank P.; and Blaho, Rudolph G., 3,961,811.
Blandon, Antonio E.: *See—*
Symens, Raymond D.; Queneau, Paul B.; and Blandon, Antonio E., 3,962,051.
Blanton, Grover, to Steer Safe, Inc. Steering arm attachment adapter for steering stabilizer. 3,961,804, Cl. 280-94.000.
Blauert, Jens; Boerger, Georg; and Laws, Peter, to Eugen Beyer Elektrotechnische Fabrik. Method and arrangement for controlling acoustical output of earphones in response to rotation of listener's head. 3,962,543, Cl. 179-1.00G.
Blidung, Otto: *See—*
Schubert, Bernhard; and Blidung, Otto, 3,961,633.
Blitz, Daniel, to Sanders Associates, Inc. Spin rate compensator. 3,961,535, Cl. 73-505.000.
Bloch, Moshe Rudolf: *See—*
Zeigerson, Esther; and Bloch, Moshe Rudolf, 3,962,208.
Bloching, Helmut; Smolka, Heinz; and Schwuger, Milan Johann, to Henkel & Cie G.m.b.H.; and Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Compositions of optical brightness and aluminosilicates and methods of their production. 3,962,116, Cl. 252-301.210.
Blok, Glen R., to Pratt Manufacturing Corporation. Mounting means for conveyor flight. 3,961,702, Cl. 198-175.000.
Blount, David H. Process for the production of an aqueous solution of silicoformic acid. 3,962,067, Cl. 252-182.000.
Blount, David H. Process for the production of silico-formic acid granules containing an alkali catalyst. 3,962,111, Cl. 252-182.000.
Blum, Harold A.: *See—*
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Blum, Helmut: *See—*
Worms, Karl-Heinz; Gloxhuber, Christian; Schmidt-Dunker, Manfred; and Blum, Helmut, 3,962,433.
Blumenthal, Gunter, to Bochumer Eisenhutte Heintzmonn, & Co. Mine roof support. 3,961,487, Cl. 61-45.00D.
Blythe Colours (Australia) Proprietary Limited: *See—*
Robinson, Ian George, 3,962,523.
Bochumer Eisenhutte Heintzmonn, & Co.: *See—*
Blumenthal, Gunter, 3,961,487.
Bock, Burkhard: *See—*
Schmalfeld, Paul; Rammler, Roland; Peters, Werner; Ahland, Erwin; Bock, Burkhard; and Lehmann, Joachim, 3,962,043.
Bode, Herbert; Gollner, Manfred; and Koberer, Gunther, to Claudius Peters AG. Thrust grate with a series of overlapping rows of plates. 3,961,588, Cl. 110-38.000.
Bodor, Nicolae S.: *See—*
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Boehringer Mannheim G.m.b.H.: *See—*
Berger, Herbert; Gall, Rudi; Thiel, Max; Vomel, Wolfgang; and Sauer, Winfriede, 3,962,242.
Boeing Company, The: *See—*
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Boerger, Georg: *See—*
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Boers, Henri Marie: *See—*
Van Eek, Wouter Hugo; Boers, Henri Marie; Grupping, Arnold

Willem J.; Van Wamelen, Pieter Jacobus J.; and Rehm, Willem Christian, 3,961,824.

Boise Cascade Corporation: *See—*
Westphal, Teddy M.; and Hough, Robert J., 3,961,566.

Boisvert, Roger L.: *See—*
Ty, Henry; White, Alfred J.; Boisvert, Roger L.; and Sears, Raymond M., 3,962,664.

Bollert, Ulrich; Kleiner, Hans-Jerg; and Herwig, Walter, to Hoechst Aktiengesellschaft. Polyesters containing structural units derived from phosphonic acids or estere. 3,962,194, Cl. 260-75.00P.

Bomba, Steven J., to Texas Instruments Incorporated. Frequency selection and control. 3,962,640, Cl. 325-421.000.

Bombardier Limited: *See—*
Tremblay, Alain; and Talbot, Jean-Guy, 3,961,539.

Bonner, Edwin J.: *See—*
Nielsen, Haagen Bach; Bonner, Edwin J.; and Lado, Ernest A., 3,961,903.

Bonno, Jean-Claude: *See—*
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Booher, Richard N., to Eli Lilly and Company. 1,3-Propandiol intermediates. 3,962,269, Cl. 260-296.00R.

Boone, Gary: *See—*
Brown, Max; and Boone, Gary, 3,962,683.

Boone, Gary W.: *See—*
Caudel, Edward R.; and Boone, Gary W., 3,962,684.

Borca, Bruno: *See—*
Fontana, Marco; and Borca, Bruno, 3,962,512.

Borer, Peter; Finck, Hans-Werner; Mayerhoefer, Horst; Sollberger, Urs; and Mueller, Wolfgang Heinz, to Sandoz Ltd. Bromo-propanol derivatives as flame retardants. 3,962,246, Cl. 260-268.00C.

Bosso, Joseph F.; and Wismer, Marco, to PPG Industries, Inc. Quaternary ammonium salt-containing resin compositions. 3,962,165, Cl. 260-29.2EP.

Bottasso, Franco; and Pacciarini, Antonio, to Industrie Pirelli S.p.A. Method and apparatus for producing a continuous band of rubberized fabric having transversal reinforcing metal elements. 3,962,022, Cl. 156-507.000.

Bowen, Gwynne; and Moore, Alan Frederick, to Dunlop Limited. Improvements in or relating to resilient mountings. 3,961,829, Cl. 308-28.000.

Bowen, James H., to BDH, Inc. Electromagnetic motor. 3,962,593, Cl. 310-46.000.

Bower, George M.; and Skena, Richard M., to Westinghouse Electric Corporation. N,N'bis(phthalic anhydride) diimides. 3,962,278, Cl. 260-326.00C.

Bowie, Betty Anne; and Pagano, Joseph F., to SmithKline Corporation. Device for making a culture of CO_2 requiring organisms. 3,961,696, Cl. 195-139.000.

Boyadjieff, George I., to Varco International, Inc. Power slip unit. 3,961,399, Cl. 24-263.0DG.

Boyd, Robert Kent; and Lindberg, Allan Walter, to International Telephone and Telegraph Corporation. Magnetically shunted current transformer. 3,962,661, Cl. 336-84.000.

Boyle, John Terence Arnott; and Saunders, John Christopher, to John Wyeth & Brother Limited. 1 (H)-1 2,4-triazole derivatives. 3,962,237, Cl. 260-247.10M.

Bozek, John S., to Continental Can Company, Inc. Child resistant easy opening closure. 3,961,722, Cl. 220-270.000.

Braat, Josephus Johannes Maria, to U.S. Philips Corporation. Record carrier on which a television signal is stored. 3,962,720, Cl. 358-4.000.

Braathen, Chris Reidar. Water heater. 3,962,560, Cl. 219-314.000.

Braley, Robert L.; Tenenbaum, Mircea; and Milano, Edward J., to Gould Inc. Yarn runner-length controller for knitting machines. 3,961,500, Cl. 66-210.000.

Brana, Miguel Fernandez: *See—*
Roldan, Cristobal Martinez; Brana, Miguel Fernandez; and Berlanga, Jose Maria Castellano, 3,962,243.

Brantingham, George L., to Texas Instruments Incorporated. Low power digit blanking circuit. 3,962,571, Cl. 235-152.000.

Brasko, Peter; Festa, Daniel E.; and Buse, Kenneth E., to Aluminum Company of America. Continuous electrodeposition of coating material on metal sheet stock. 3,962,060, Cl. 204-181.000.

Brauchbar, Robert Erik: *See—*
Clark, David Ronald; Hyde, Thomas Gerald; and Brauchbar, Robert Erik, 3,962,115.

Braunschweiler, Hans Georg, to Uniroyal Inc. Machine for producing circular textile webs. 3,961,498, Cl. 66-13.000.

Breitscheidel, Hans-Ulrich: *See—*
Alfter, Franz Werner; and Breitscheidel, Hans-Ulrich, 3,962,016.

Brems, John Henry. Internal combustion engine. 3,961,607, Cl. 123-78.00R.

Brendley, William H., Jr.: *See—*
Martorano, Richard; Brendley, William H., Jr.; and Haag, Thomas H., 3,962,167.

Brenneman, Richard S.; and Clancy, John J., to Combustion Equipment Associates, Inc. Process for treating organic wastes and product thereof. 3,961,913, Cl. 44-1.00D.

Breuer, Hermann; and Treuner, Uwe D., to E. R. Squibb & Sons, Inc. 2-(Thiocarbonylamino)acetamido-7α-methoxy cephalosporanic acid compounds. 3,962,229, Cl. 260-243.00C.

Brewer, Harold, to Irvin Industries, Inc. Cargo net. 3,961,585, Cl. 105-469.000.

Bridgestone Tire Company Limited: *See—*
Nakamoto, Yuzuru; Kubota, Eishi; and Suzuki, Fukushi, 3,961,740.
Yonekawa, Hisashi; and Azuma, Tosio, 3,962,020.

Briggs & Stratton Corporation: *See—*
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Brilando, Frank P.; and Blaho, Rudolph G., to Schwinn Bicycle Company. Bicycle reflector bracket. 3,961,811, Cl. 280-289.00A.

Brinkmann, Bernd; and Imoehl, Wolfgang, to Schering Aktiengesellschaft. Cyanoacrylate adhesives. 3,961,966, Cl. 106-36.000.

British Sealed Beams Limited: *See—*
Draper, Geoffrey Roland, 3,962,596.

British Steel Corporation: *See—*
Cornforth, Alexander Rankin, 3,961,523.

Brobst, Clarence O. Indoor-outdoor image projection system. 3,961,839, Cl. 350-117.000.

Brodmann, Franz J., to General Refractories Company. Process for producing perlite microspheres. 3,961,978, Cl. 106-288.00B.

Brody, Donald E.; and Karoly, Gabriel, to M & T Chemicals Inc. Process for coating metal substrates. 3,962,499, Cl. 427-386.000.

Broeckx, Willy P.: *See—*
Dulog, Lothar G.; and Broeckx, Willy P., 3,962,201.

Brooks, Thomas Aaron, to Deere & Company. Foundry facing sand composition. 3,961,967, Cl. 106-38.230.

Brothers, Alvin O. Multi-position container holding arrangement. 3,961,765, Cl. 248-126.000.

Brothers, Alvin O. Container holding arrangement. 3,961,766, Cl. 248-210.000.

Brown, Edward L.: *See—*
Crow, Harold E.; and Brown, Edward L., 3,961,769.

Brown, George A. Fuel vaporizer for engines. 3,961,616, Cl. 123-122.00A.

Brown, Martin Luther, to Du Pont de Nemours, E. I., and Company. Apparatus for reinforcing tubing. 3,961,873, Cl. 425-114.000.

Brown, Max; and Boone, Gary. CPU programmable control system. 3,962,683, Cl. 340-172.500.

Brown, Philip A.; and Brown, Vincent B., to Harlo Products Corporation. Hedger. 3,961,468, Cl. 56-237.000.

Brown, Richard E.; Puchalski, Chester; and Shavel, John, Jr., to Warner-Lambert Company. Novel substituted benzopyranopyridine. 3,962,266, Cl. 260-295.00T.

Brown, Richard W.: *See—*
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Brown & Root, Inc.: *See—*
Nolan, Clyde Earvin, Jr.; Soland, John Paul; and Tillinghast, William Samuel, 3,961,493.

Brown, Stanley L. Excavating device. 3,961,429, Cl. 37-80.00R.

Brown, Vincent B.: *See—*
Brown, Philip A.; and Brown, Vincent B., 3,961,468.

Brown, William E.: *See—*
Szanto, Joseph; Brown, William E.; and Meyers, Edward, 3,962,426.

Brown, William L., Jr.; and Brunhuber de Perez, Barbara, to Cornell Research Foundation, Inc. Bait insecticide for carpenter ants. 3,962,461, Cl. 424-352.000.

Brubaker, Hiram Allen: *See—*
Goloff, Alexander; and Brubaker, Hiram Allen, 3,961,404.

Bruecker, George B. Inverted silo chutes having swingable side wall panels. 3,961,693, Cl. 193-14.000.

Brun, Jean-Claude: *See—*
Brut, Albert; Nave, Gerard; Deleuil, Jean-Pierre; Brun, Jean-Claude; and Martin, Yves, 3,962,064.

Brunhuber de Perez, Barbara: *See—*
Brown, William L., Jr.; and Brunhuber de Perez, Barbara, 3,962,461.

Brunson, Raymond D. Memory control circuitry. 3,962,689, Cl. 340-173.00R.

Brunson, Raymond D. Switch closure responsive logic signal generation means. 3,962,699, Cl. 340-323.00B.

Brunswick Corporation: *See—*
Geary, Arthur L., 3,961,514.
Meyer, James A., 3,961,595.

Brusa, Bruno; Panozzo, Camillo; and Zanini, Giovanni, to Montefibre S.p.A. Method for washing acrylic filaments. 3,961,890, Cl. 8-137.500.

Brut, Albert; Nave, Gerard; Deleuil, Jean-Pierre; Brun, Jean-Claude; and Martin, Yves, to Commissariat a l'Energie Atomique. Electrolyzer and a method for the production of readily oxydizable metals in a state of high purity. 3,962,064, Cl. 204-245.000.

Bruton, Timothy Michael, to U.S. Philips Corporation. $Bi_4Ti_3O_{12}$ Single crystal growth from saturated seeded solution. 3,962,027, Cl. 156-624.000.

Bubik, Alfred; and Platz, Friedrich, to Escher Wyss G.m.b.H. Stock inlet for a paper machine. 3,962,031, Cl. 162-338.000.

Bucalo, Louis, to Investors In Ventures, Inc. Methods for applying surgical splints. 3,961,631, Cl. 128-334.00R.

Buck, Homer G. Waste metal removal in E.D.M. machining. 3,962,557, Cl. 219-69.00D.

Buck K.G., Firma: *See—*
Faber, Walter; and Huber, Paul, 3,961,579.

Buckle, Derek Richard; Cantello, Barrie Christian Charles; and Smith, Harry, to Beecham Group Limited. Anti-allergenic carbostyril derivatives. 3,962,445, Cl. 424-258.000.

Buehler, Jay K.; Carlson, Thomas R.; and McIntosh, Alvin J., to Kennecott Copper Corporation. Machine for and method of stemming blast holes. 3,961,492, Cl. 61-63.000.

Buehler, Max, to Weelpal AG. Installation for loading a road vehicle with loading units. 3,961,714, Cl. 214-41.00R.
Bugaut, Andree; and Laudon, Monique, to L'Oreal. Dye composition for keratinic fibers containing a phenol coupler. 3,961,879, Cl. 8-10.200.
Bukac, Zbynek; and Sebenda, Jan, to Ceskoslovenska akademie ved. Method for producing cyclic trimers of organic isocyanates. 3,962,239, Cl. 260-248.0NS.
Bungay, Henry R., III: *See—*
Trivedi, Ramesh C.; Bungay, Henry R., III; and Cuccolo, Paul J., 3,961,899.
Burgdorf, Jochen: *See—*
Schanz, Johannes; and Burgdorf, Jochen, 3,961,690.
Burkwall, Morris P., Jr.; and Leyh, Joseph C., to Quaker Oats Company, The. Stabilization of dry pet food. 3,962,462, Cl. 426-1.000.
Burnett, William M.; and Horst, Albert W., Jr., to United States of America, Navy. Energy-absorbing sabot. 3,961,580, Cl. 102-93.000.
Burns, Edward P.; and McCord, Herbert W., to General Signal Corporation. Sensor for a ground fault circuit interrupter. 3,962,606, Cl. 317-18.00D.
Burns, Wade D., to Dynaco Inc. Loudspeaker protective system. 3,962,607, Cl. 317-31.000.
Burroughs Corporation: *See—*
Carter, William F.; and Drinkard, John H., Jr., 3,962,562.
Miller, Bruce Jeffrey, 3,962,611.
Sevak, Nitin M.; and Su, Chauchang, 3,961,784.
Burrows, Sidney, to Distillers Company (Yeast) Limited, The. Processes of drying yeast. 3,962,467, Cl. 426-62.000.
Burt, Wallace Allison: *See—*
von Dohlen, Henry Claus; and Burt, Wallace Allison, 3,961,708.
Burton, James M.; and Tieden, Jansey D., to Boeing Company, The. Digital following error measurement system. 3,962,618, Cl. 318-561.000.
Busch, Albert E., to Sarkes Tarzian, Inc. Digital rotary special effects generator. 3,962,536, Cl. 178-6.800.
Busch, Norbert: *See—*
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Busch, Peter, to Henkel & Cie G.m.b.H. Hair bleaching preparations containing keratose and processes of using the same. 3,961,634, Cl. 132-7.000.
Buse, Kenneth E.: *See—*
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Bushell, Brian John: *See—*
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Butler, George B., to State of Florida, The Board of Regents of the. Gel chromatography process for fractionating ionic polymers. 3,962,206, Cl. 260-96.00R.
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Byrne, Michael F.; and Powelson, Douglas V. N., to Allied Chemical Corporation. Method of joining plastic pipe. 3,961,814, Cl. 285-21.000.
C.A.V. Limited: *See—*
Mowbray, Dorian Farrar, 3,961,861.
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C. L. Frost & Son, Inc.: *See—*
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C-O, Inc.: *See—*
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Calia, Vincent S.; and Leftheris, Basil P., to Grumman Aerospace Corporation. Method and apparatus for monitoring an electrically actuated tool. 3,962,694, Cl. 340-267.00R.
Campbell, Jeptha E.; and Gilchrist, James E., to United States of America, Health, Education and Welfare. Method and apparatus for plating and counting aerobic bacteria. 3,962,040, Cl. 195-127.000.
Campos, Omar: *See—*
Pollio, Frank Xavier; and Campos, Omar, 3,961,981.
Cannalonga, Marco Alfred; and Czarecki, Louis Vincent, to Hoffmann-La Roche Inc. Spray-drying technique for preparing agglomerated powders. 3,962,384, Cl. 264-7.000.
Canon Kabushiki Kaisha: *See—*
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Cantello, Barrie Christian Charles: *See—*
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Canup, Robert E., to Texaco Inc. Controlled spark-duration ignition system. 3,961,613, Cl. 123-148.00E.
Capaccio, Giancarlo: *See—*
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Carbonnel, Henri; and Vaury, Pierre, to Groupement pour les Activites Atomiques et Avancees. Installation for the treating of a molten metal. 3,961,778, Cl. 266-217.000.
Carborundum Company, The: *See—*
Economy, James; Cottis, Steve C.; and Nowak, Bernard E., 3,962,314.
Cardwell, Gilbert I., to Hughes Aircraft Company. Current driven inverter. 3,962,626, Cl. 321-45.00R.
Carl Zeiss-Stiftung: *See—*
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Carter, Martin F. Portable greenhouse. 3,961,442, Cl. 47-17.000.
Carter, William F.; and Drinkard, John H., Jr., to Burroughs Corporation. Resistance solder unit control. 3,962,562, Cl. 219-490.000.
Catalytic Pollution Controls, Inc.: *See—*
Gintella, Louis; Kundrat, Harry; and Raman, Anantha K. S., 3,961,900.
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Caudel, Edward R.; and Boone, Gary W., to Texas Instruments Incorporated. Computing system interface using common parallel bus and segmented addressing. 3,962,684, Cl. 340-172.500.
Caudill, Charles, Jr., to General Motors Corporation. Vehicle seat bolster wire assembly. 3,961,823, Cl. 297-452.000.
Cavanaugh, Robert M.: *See—*
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Cedar, Raymond J.; and Deyo, Rodney R., to Ford Motor Company. Carburetor with combined choke pulldown and fast idle cam kickdown apparatus. 3,962,380, Cl. 261-39.60B.
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Horlenko, Theodore; and George, James Henry, 3,962,350.
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Chamberlin, Thomas A., to Dow Chemical Company, The. Process for making α-chlorinated derivatives of 2-alkyl-2-oxazolines and 2-alkyl-5,6-dihydro-4H-oxazines. 3,962,235, Cl. 260-244.00R.
Chandler Evans Inc.: *See—*
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Chang, Jen-Lin; and Zakin, Jacques L., to University of Missouri, The Curators of the. Methods and compositions for reducing the frictional resistance to flow of aqueous liquids. 3,961,639, Cl. 137-13.000.
Chang, Wen-Hsuan; Scriven, Roger L.; and Prucnal, Paul J., to PPG Industries, Inc. Sealer-primer for elastomeric coatings. 3,962,369, Cl. 260-849.000.
Chang, Wen-Hsuan; and Hartman, Marvis E., to PPG Industries, Inc. Poly(ether-urethane) coating cured with an aminoplast on a solid substrate. 3,962,521, Cl. 428-423.000.
Chang, Wen-Hsuan; and Hartman, Marvis E., to PPG Industries, Inc. Poly(esterurethane) coating cured with an aminoplast on a solid substrate. 3,962,522, Cl. 428-423.000.
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Chauvette, Robert R., to Eli Lilly and Company. 3-Halo cephalosporins. 3,962,227, Cl. 260-243.00C.

Chemie and Filter GmbH: *See*—
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Chen, Mark Chaoming, to Du Pont de Nemours, E. I., and Company. Neoprene compositions containing triarylphosphines. 3,962,179, Cl. 260-45.95G.

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Chernock, Stephen P. Valve assembly. 3,961,876, Cl. 431-344.000.

Chevron Research Company: *See*—
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Chiba, Tetsuo; Itoh, Yoshio; and Makabe, Satoshi, to Sankyo Organic Chemicals Co., Ltd. Process for the preparation of stabilizers for synthetic resins. 3,962,296, Cl. 260-429.700.

Chigirinsky, Alexandr Abramovich: *See*—
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Chimura, Kazuya; Iwata, Hiroshi; Kagawa, Kazunori; and Ishida, Kazuhiko, to Mitsubishi Rayon Co., Ltd. Polyester compositions having a durable antistatic property. 3,962,185, Cl. 260-47.00C.

Chiocchio, Louis R.; and Zirlis, Robert S., to Olin Corporation. Polyurethane foam generating apparatus. 3,962,120, Cl. 252-359.00E.

Chirash, William; Haase, Alfred Edgar; and Limekiller, Andrew Henry, to Colgate-Palmolive Company. Non-phosphate spray dried detergents containing dicarboxylic acid salts. 3,962,149, Cl. 252-540.000.

Christensen, Burton G.; and Ratcliffe, Ronald W., to Merck & Co., Inc. Cephalosporin compounds. 3,962,224, Cl. 260-243.00C.

Chrobak, Dennis Steven, to Goodyear Tire & Rubber Company, The. High speed radial ply tire. 3,961,657, Cl. 152-355.000.

Chromalloy American Corporation: *See*—
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Chrysler Corporation: *See*—
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Chu, Ting L., to United States of America, National Aeronautics and Space Administration. Fabrication of polycrystalline solar cells on low-cost substrates. 3,961,997, Cl. 148-174.000.

Chugai Seiyaku Kabushiki Kaisha: *See*—
Furuno, Kouji; Okazaki, Akira; Matsubara, Syuzo; Shiba, Motoharu; and Shioya, Akitoshi, 3,962,429.
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Citizen Watch Co., Ltd.: *See*—
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Citron, Joel David, to Du Pont de Nemours, E. I., and Company. Process for removing vanadium catalyst residues from polymer solutions. 3,962,199, Cl. 528-485.000.

Claassen, Lutz, to Hawker Siddeley Canada Ltd. Guide apparatus for rotary saws having floating circular saw blades. 3,961,548, Cl. 83-169.000.

Clancy, John J.: *See*—
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Clark, David L.: *See*—
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Clark, David Ronald; Hyde, Thomas Gerald; and Brauchbar, Robert Erik, to Ciba-Geigy AG. Treatment of optical brightening agents. 3,962,115, Cl. 252-301.230.

Clark, Eugene V.: *See*—
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Clark, Kendall; Lemberger, Alan D.; and Shapiro, Milton R., to International Business Machines Corporation. Gas discharge display panel including electrode connections in plurality of non-conductive layers. 3,962,597, Cl. 313-188.000.

Clark, Richard A. Method and apparatus for dispensing fluids under pressure. 3,961,725, Cl. 222-1.000.

Classen, Josef: *See*—
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Clodfelter, Glen A., to United States of America, Army. Rocket launcher telescoping tube locking mechanism. 3,961,556, Cl. 89-1.816.

Close, James R.; Wood, William P.; Hatch, Robert A.; and Johnson, James R., to Minnesota Mining and Manufacturing Company. Catalytic converter. 3,961,907, Cl. 23-288.0FC.

Cloud, Charles E.: *See*—
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Clugston, George Doyle. Safety step for vehicles. 3,961,809, Cl. 280-166.000.

Coates, Harold: *See*—
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Cobb, Raymond L., to Phillips Petroleum Company. Magnesium-aluminum-silicate-phosphate catalysis for ammonialytic cleavage of lactams to form omega-aminonitriles. 3,962,134, Cl. 252-437.000.

Cohen, Hyman L.: *See*—
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Cohen, William A., to Sphero International Company. Universal joint. 3,961,497, Cl. 64-21.000.

Coldren, Kenneth M. Method for treating whole kernels of feed grain. 3,962,479, Cl. 426-532.000.

Cole, Allan R., executor: *See*—
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Collins, John Desmond; Coates, Harold; and Siddiqui, Iftikhar Hussain. Novel diorganotin derivatives of α, ω-dimercaptans and method for preparing same. 3,962,295, Cl. 260-429.700.

Collot, Gerard; and Ferreol, Jean, to Societe Dite: Electronique Marcel Dassault. Airborne telemetering radar having variable width range gates. 3,962,703, Cl. 343-7.300.

Colonial Rubber Works, Inc.: *See*—
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Combustion Equipment Associates, Inc.: *See*—
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Comer, Frederick W.; and Strong, Clifford H. G., to Uniroyal, Ltd. Clear, elastic, water gels based on carrageenan. 3,962,482, Cl. 426-575.000.

Cominco Ltd.: *See*—
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Conner, William R., Jr., to Stahl-Urban Company. Methods of molding moldable textile fabrics. 3,962,392, Cl. 264-89.000.

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Cook, Paul J.: *See—*
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Corgnet, Jean-Louis, to Compagnie Francaise des Petroles. Anchorage of floating structures. 3,961,490, Cl. 61-46.500.
Corgnet, Jean-Louis, to Compagnie Francaise des Petroles. Quick release. 3,961,592, Cl. 114-206.00R.
Cornell Research Foundation, Inc.: *See—*
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Cornforth, Alexander Rankin, to British Steel Corporation. Scanning ultrasonic inspection method and apparatus. 3,961,523, Cl. 73-67.80S.
Corning Glass Works: *See—*
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Corrons, Bill E.; and Barker, James F., to General Dynamics Corporation. Multiple diode microwave oscillator apparatus. 3,962,654, Cl. 331-56.000.
Cosentino, Joseph P.; and Mahn, Frederick R., to Drew Chemical Corporation. Non-foaming dispersing composition. 3,962,119, Cl. 252-351.000.
Costemalle, Bernard; and van Ek, Arnold Cornelis, to Exxon Research and Engineering Company. Polyolefin-elastomer compositions. 3,962,018, Cl. 156-306.000.
Cottam, Stephen M.: *See—*
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Cotti, Gino, to Ankerfarm, S.p.A. Process for the preparation of 6-demethyl-6-deoxy-6-methylene-tetracyclines. 3,962,330, Cl. 260-559.0AT.
Cotti, Gino, to Ankerfarm, S.p.A. Process for the preparation of α-6-deoxytetracyclines. 3,962,331, Cl. 260-559.0AT.
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Coulboy, Rene H.; and Taylor, Donald F., to Subsea Equipment Associates Limited. Leak-tight ball-and-socket connecting device transmitting torques and stresses between two pipes. 3,961,815, Cl. 285-93.000.
Coulter Diagnostics, Inc.: *See—*
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Crandall, Clyde O.; and Douglas, Charles Delbert, to Safeway Stores, Incorporated. Apparatus and method for washing interiors of truck and trailer bodies. 3,961,983, Cl. 134-8.000.
Crawford, Mildred A. Decorative and protective device for use with a floral container. 3,962,503, Cl. 428-40.000.
Creamer, Adelene B. Clothes hanger support and storage apparatus. 3,961,710, Cl. 211-49.00R.
Crepinsek, Alois, to Crepinsek, Alois; Chagra, Lee A.; and McFadden, Dave, part interest to each. Lock cylinder having a releasable catch. 3,961,508, Cl. 70-370.000.
Crew, Wynn D., to Microtech Press Inc. Ultra-high reduction microfiche layout and positioning mechanism therefor. 3,961,846, Cl. 353-27.00R.
Criscimagna, Tony N.; and Piston, Albert O., to International Business Machines Corporation. Alphanumeric gas display panel with modular control. 3,962,700, Cl. 340-324.00M.
Croix, Louise S.; and Szur, Alex J., to Airco, Inc. Ether compounds as inhalant anesthetics. 3,962,460, Cl. 424-342.000.
Crook, Evan H.: *See—*
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Cross, Michael Ellison; and Coles, Albert Edward. Lubrication of rotatable members. 3,961,687, Cl. 184-6.900.
Crow, Harold E.; and Brown, Edward L., to Armco Steel Corporation. Adjustable bearing structure for butterfly gate valves. 3,961,769, Cl. 251-305.000.
Crowe, Curtis W., to Dow Chemical Company, The. Composition and method for acidizing earthen formations. 3,962,101, Cl. 252-8.55C.
Crowe, Curtis W., to Dow Chemical Company, The. Composition and method for acidizing earthen formations. 3,962,102, Cl. 252-8.55C.
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Cukor, Peter; and Kilichowski, Kurt B., to GTE Laboratories Incorporated. Preparation of highly soluble bismuth salts of organic alkanoic acids. 3,962,298, Cl. 260-447.000.
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Curran, William Vincent, to American Cyanamid Company. D-3,6-Diaminohexanoic acid 2-(carboxymethyl)-2-methylhydrazide, process of preparing and intermediates of said process. 3,962,317, Cl. 260-482.00B.
Cusumano, James A., to Exxon Research and Engineering Company. Olefin oxidation process. 3,962,285, Cl. 260-348.50R.
Cutler, Norman W., Jr., to Polaroid Corporation. Accessory adapter for photographic apparatus. 3,962,711, Cl. 354-295.000.
Cygnor, John E.; and Sundberg, Jack G., to Chandler Evans Inc. Clutch connected multi-stage impeller pump. 3,961,859, Cl. 415-18.000.
Czarecki, Louis Vincent: *See—*
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Czarnetzky, Edward J.: *See—*
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Dahill, Robert T., Jr., to Givaudan Corporation. Synthesis of cis-3-hexen-1-ol. 3,962,354, Cl. 260-638.00R.
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Daniel, Donald G. Footrest for desks. 3,961,822, Cl. 297-423.000.
Dao, Tich T., to Signetics Corporation. Expandable parallel binary shifter/rotator. 3,961,750, Cl. 235-164.000.
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Davis, John M., Jr., to Hughes Aircraft Company. Carrier for mounting a semiconductor chip and method therefor. 3,961,415, Cl. 29-591.000.
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Dickens, Elmer Douglas, Jr., to B. F. Goodrich Company, The. Smoke retardant vinyl chloride and vinylidene chloride polymer compositions. 3,962,177, Cl. 260-45.75N.
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Dietze, Wolfgang, to Siemens Aktiengesellschaft. Heatable hollow semiconductor. 3,962,670, Cl. 338-334.000.
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DiMaio, Anthony E., to Marson Fastener Corporation. Rivet setting tool. 3,961,517, Cl. 72-391.000.
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Doi, Yoshikazu; Sakai, Yutaka; and Sado, Kenzo, to Fuji Photo Optical Co., Ltd. Zoom lens system. 3,961,845, Cl. 350-184.000.
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Edstrom, Soren E. H.; Ertel, Richard L.; and Litteken, Robert A., to Gardner-Denver Company. Compressor control system. 3,961,862, Cl. 417-282.000.

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Edwards, Hugh K. Non-skid coating and method. 3,962,168, Cl. 260-29.6RW.

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Eigel, James Anthony, to Superior Continental Corporation. Electrical insulation protector means. 3,962,554, Cl. 174-74.00A.

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Ellen, Harry J. Trunk mounted roller for handling heavy objects. 3,961,715, Cl. 214-84.000.

Eltra Corporation: *See—*
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Emmick, Thomas L., to Eli Lilly and Company. Juvenile hormone mimics. 3,962,282, Cl. 260-340.500.

Emodi, Alexander, to Hoffmann-La Roche Inc. Stabilized insecticide compositions. 3,962,428, Cl. 424-174.000.

Empire Plating Company, The: *See—*
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Engelbrecht, Rudolf Succo, to RCA Corporation. Handwriting identification technique. 3,962,679, Cl. 340-146.3SY.

England, David Charles, to Du Pont de Nemours, E. I., and Company. Synthesis of perfluoropyruvyl fluoride dimer. 3,962,279, Cl. 260-340.200.

Entine, Gerald; Wilson, Frank C.; and Farrell, Richard, to Tyco Laboratories, Inc. Electrical contact structure for semiconductor body. 3,962,669, Cl. 338-19.000.

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Ernst, Franz, to Chemie and Filter GmbH. Proportioning pump. 3,961,860, Cl. 417-44.000.

Ernst, Heini; and Guenin, Albert, to Hoffmann-La Roche Inc. Automatic regulation of respirators. 3,961,627, Cl. 128-145.800.

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Etchegoyhen, Pedro, to Raymond Lee Organization, Inc., The, a part interest. Racing game. 3,961,791, Cl. 273-86.00B.

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Evans, Norol T., to Hughes Aircraft Company. Moving target indicator clutter tracker. 3,962,704, Cl. 343-7.700.

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Falkenberg, Johan Caspar. Manufacture of construction elements. 3,961,407, Cl. 29-200.00B.

Faress, Sidney M.; and Thomas, Dallas C., to Uniroyal Inc. Method of making an ironer roll cover. 3,962,493, Cl. 427-259.000.

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Farrish, Dean T.; and Templeton, Dalton E., to Sandoz, Inc. Humidification apparatus. 3,962,381, Cl. 261-141.000.

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Fatula, James J., to Ryman Engineering Co. Self-centering rolls. 3,961,737, Cl. 226-192.000.

Faubl, Hermann; and Belton, Annette M., to Pfizer Inc. Rhodium containing catalyst and use thereof in preparation of 6-deoxy-5-oxytetracycline. 3,962,131, Cl. 252-429.00R.

Faulkner, Max L. Traction device. 3,961,773, Cl. 256-1.000.

Fauran, Claude P.; Eberle, Jeannine A.; Raynaud, Guy M.; and Dorme, Nicole A. M., to Delalande S.A. 2-Aminomethyl benzimidazole derivatives. 3,962,256, Cl. 260-293.600.

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Ferres, Harry; Kemmenoe, Adrian Victor; and Best, Desmond John, to Beecham Group Limited. Penicillins. 3,962,216, Cl. 260-239.100.

Ferrier, Duncan Cameron; Berry, Thomas; and Murenbeeld, Karel, to John Heathcoat & Co. Ltd. Apparatus for the production of bulked and crimped yarn. 3,961,401, Cl. 28-1.300.

Ferrier, Duncan Cameron; Berry, Thomas; and Murenbeeld, Karel, to John Heathcoat & Company Ltd. Process for the production of bulked and crimped yarn. 3,961,402, Cl. 28-72.140.

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Finke, Manfred; and Kleiner, Hans-Jerg, to Hoechst Aktiengesellschaft. Preparation of phosphorus-organic esters. 3,962,378, Cl. 260-968.000.

Finlay, Alexander James; and Taylor, Geoffrey, to Imperial Chemical Industries Limited. Seal. 3,961,735, Cl. 226-168.000.

Firmenich S.A.: *See—*
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Fisher, Robert E., to Up-Right, Inc. Mobile scaffold with series-connected hydraulic motor drive. 3,961,681, Cl. 180-66.00R.
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Fleischer, Henry. Baby holding device. 3,961,803, Cl. 280-642.000.
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Forest, Joseph G.; and Czarnetzky, Edward J. Method for preserving high moisture content agricultural grains. 3,962,475, Cl. 426-331.000.
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Forster Electronic GmbH: *See—*
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Foseco International Limited: *See—*
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Foti, Anthony J., to Goodyear Tire & Rubber Company, The. Textile composite structure and method of preparation. 3,962,511, Cl. 428-246.000.
Fotland, Richard A., to Horizons Incorporated. Electrostatic bar code printer. 3,961,574, Cl. 101-1.000.
Fournet, Maurice Pierre Joseph, to Centre National d'Etudes Spatiales. Pressurization and dispensing device for a liquid monopropellant in a container. 3,961,726, Cl. 222-3.000.
Fracheboud, Michel G.: *See—*
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Franke, Kurt, to Siemens Aktiengesellschaft. High-voltage generator for an X-ray diagnostic apparatus. 3,962,622, Cl. 321-8.00R.
Frankle, Gerhard; and Klak, Roland, to Daimler-Benz Aktiengesellschaft. Preheating installation for air-compressing and auto-igniting injection internal combustion engine. 3,961,611, Cl. 123-122.00D.
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Frenyo, Vilmos, to Novex Talalmanyfejleszto es Ertekesito Kulkereskedelmi Rt. Process and equipment for the determination of certain components, particularly the carbon dioxide content of gas mixture. 3,961,895, Cl. 23-232.00E.
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Fujiyama, Susumu; Takagawa, Minoru; and Kajiyama, Shiro, to Mitsubishi Gas Chemical Company, Inc. Method for decomposing an aromatic aldehyde-hydrogen fluoride-boron fluoride complex. 3,962,343, Cl. 260-599.000.
Fukazawa, Nobuo: *See—*
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Fukushima, Seitaro; Saito, Ariyoshi; and Kaneko, Fukuzo, to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha. Post-treatment of ilmenite ore subjected to selective chlorination treatment. 3,961,940, Cl. 75-1.00T.
Fulghum, David A.; and Badini, John R., to International Harvester Company. Control linkage for hydrostatic transmission. 3,961,542, Cl. 74-470.000.
Fuller, Peter G.; and Stoeckler, Hans A., to Texas Instruments Incorporated. Method of making ceramic semiconductor elements with ohmic contact surfaces. 3,962,487, Cl. 427-82.000.
Fuller, Ronald George. Deflector rudders. 3,961,591, Cl. 114-166.000.
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Garland, Robert B.; and Pappo, Raphael, to G. D. Searle & Co. Total synthesis of 11-alkyl steroids. 3,962,291, Cl. 260-397.450.
Garr, Ernest J. Bathtub appliance with hot water bladder and heat chamber. 3,961,380, Cl. 4-160.000.
Gay, Michael J., to Motorola, Inc. Methods and systems for providing stereo decoding signals. 3,962,551, Cl. 179-15.0BT.
Gay, Michael J., to Motorola, Inc. Integrated circuit amplifier having controlled gain and stable quiescent output voltage level. 3,962,650, Cl. 330-29.000.
Gaydos, Robert M.; Guziak, Leonard F.; and Maxwell, Robert W., Jr., to Koppers Company, Inc. Process for producing a mixture of isopropylnaphthalenes. 3,962,365, Cl. 260-671.00P.
Geary, Arthur L., to Brunswick Corporation. Twist drawn wire, process and apparatus for making same. 3,961,514, Cl. 72-274.000.
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Gehrie, Charles S.; and Bako, Lazlo, to Presto Lock Company. Latching device including combination locking means. 3,961,505, Cl. 70-66.000.
Geisthoff, Hubert, to Jean Walterscheid GmbH. Device for connecting a power transmission shaft of an agricultural implement, machine or the like to a tractor power take-off shaft. 3,961,677, Cl. 180-14.00B.
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George, Howard A. Method of and means for winding coils from foil or strip when coils have several taps. 3,961,417, Cl. 29-605.000.
George, James Henry: *See*—
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George Kent Limited: *See*—
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George, Lisle W.; and Carmichael, Leland E., to Cornell Research Foundation, Inc. Plate methods for diagnosing *Brucella canis* infection. 3,962,413, Cl. 424-8.000.
Gerek, Gene; and Coucher, Robert G., to EPPCO. Novel process for applying thermoset resinous coatings. 3,962,486, Cl. 427-34.000.
Gerharz, Reinhold, to United States of America, Army. Passive stereovision range finder. 3,961,851, Cl. 356-1.000.
Germanas, Dalia; and Pollitzer, Ernest L., to Universal Oil Products Company. Olefin isomerization using a cobalt-sulfur catalyst. 3,962,367, Cl. 260-683.200.
Gerry, Martin E. Pure oxygen supply to an internal combustion engine. 3,961,609, Cl. 123-119.00E.
Gervais-Danone AG: *See*—
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Giammarco, Paolo: *See*—
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Gibson, Roland Richard, to Glacier Metal Company Limited, The. Apparatus for removing contaminants from the surface of a fluid. 3,962,093, Cl. 210-242.00S.
Gilbert, Curtiss M.; Bemis, Richard A.; and Schulze, Norman D., to Sprague Electric Company. Method for forming a uniform oxide film on a valve metal. 3,962,048, Cl. 204-28.000.
Gilbert, Humphrey. Gas adsorber cell test sampler. 3,961,920, Cl. 55-387.000.
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Gilmore, Thomas P.; and Moore, David L., to Allis-Chalmers Corporation. Digital automatic transmission control. 3,961,546, Cl. 74-866.000.
Gintella, Louis; Kundrat, Harry; and Raman, Anantha K. S., to Catalytic Pollution Controls, Inc. Combustible vapor detector. 3,961,900, Cl. 23-254.00E.
Giordano, Antonio, to Viges S.p.A. Processes and devices for buffing the soles of shoe uppers. 3,961,390, Cl. 12-1.00A.
Giordmaine, Joseph Anthony. Optical pulse position modulator. 3,961,841, Cl. 350-160.00R.
Giorgi, Tiziano A.; and Hellier, Stephen John, to S.A.E.S. Getters S.p.A. Getter pump. 3,961,897, Cl. 23-252.00R.
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Goetz, Norbert, to BASF Aktiengesellschaft. Production of piperitenone. 3,962,341, Cl. 260-586.00C.
Goldfarb, Adolph E.; and Benkoe, Erwin. Motor skill game. 3,961,794, Cl. 273-132.000.
Goldman, Max, to RRC International, Inc. Apparatus and method for protecting a shoreline against contamination from an oil spill. 3,962,083, Cl. 210-79.000.
Gollner, Manfred: *See*—
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Goodyear Tire & Rubber Company, The: *See—*
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Gordon, Amirav; and Gross, Jack, to Yissum Research Development Company. Test for determination of triiodothyronine. 3,961,894, Cl. 23-230.600.

Gordon, Edwin J.; and Gordon, Adam I. Magnetic container cover. 3,961,721, Cl. 220-230.000.

Gore, Robert Walton, to W. L. Gore & Associates, Inc. Very highly stretched polytetrafluoroethylene and process therefor. 3,962,153, Cl. 260-2.50R.

Gosswald, Fritz, to Eulit-Werk Staude & Co. KG. Sales display, in particular for watchband transparent packages. 3,961,830, Cl. 312-135.000.

Goto, Yukitaka: *See—*
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Gould Inc.: *See—*
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Grabowsky, Otto: *See—*
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Graham, Walter B. Means for cutting squares. 3,961,552, Cl. 83-821.000.

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Green Cross Corporation, The: *See—*
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Greschat, Walter; and Schubert, Wolfgang, to Siemens Aktiengesellschaft. X-ray image intensifier having input screen with carbon layer. 3,962,582, Cl. 250-483.000.

Grieshaber, Hermann; and Wessel, Wolf, to Robert Bosch G.m.b.H. Process and system for detoxicating the exhaust gases of an internal combustion engine. 3,961,477, Cl. 60-274.000.

Griffith, James R.: *See—*
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Grigsby, Donald M.: *See—*
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Grimm, William C. Shaving cream can having brush attachment. 3,961,729, Cl. 222-192.000.

Grimpe, Karl, to DEMAG Atkiengesellschaft. Shrunk fit coupling. 3,961,853, Cl. 403-273.

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Grolemund, Donald J.: *See—*
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Gronen, Willy; and Hertel, Hasso, to Hoechst Aktiengesellschaft. Process for the printing of cellulose containing textile material. 3,961,887, Cl. 8-71.000.

Gronen, Willy: *See—*
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Hertel, Hasso; and Gronen, Willy, 3,961,886.

Gross, Jack: *See—*
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Grosso, Silvano; and Nelson, Kenneth E., to Dow Chemical Company, The. Method for preparing liquid feed supplements containing calcium chloride. 3,962,484, Cl. 426-658.000.

Grosso, Vincent Gerard, to American Cyanamid Company. Process for N,N,N',N'-tetraarylquinone diimonium salts. 3,962,290, Cl. 260-396.00N.

Groupement pour les Activites Atomiques et Avancees: *See—*
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Grumman Aerospace Corporation: *See—*
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Grunberg, Emanuel; and Hoffer, Max, to Hoffmann-La Roche Inc. Combination of oxytetracycline and 2,4-diamino-5-(3-alkoxy-4,5-methylenedioxybenzyl)pyrimidine. 3,962,435, Cl. 424-227.000.

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Gundelfinger, Richard. Two position rotary valve for injecting sample liquids into an analysis system. 3,961,534, Cl. 73-422.0GC.

Guthrie, Robert William; Kierstead, Richard Wightman; and Lemahieu, Ronald Andrew, to Hoffmann-La Roche Inc. 7-Oxa steroids. 3,962,275, Cl. 260-310.00C.

Gutman, Nathan: *See—*
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Guyen-Phuoc, Boa-Dam N., to Schlumberger Instruments et Systemes. Apparatus for presetting a counter to a given initial count. 3,962,565, Cl. 235-92.0PE.

Guziak, Leonard F.: *See—*
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Hagen, Leonard J.; Martin, James S.; and Workman, Clark B., to Remington Arms Company, Inc. Fore-end and barrel support. 3,961,436, Cl. 42-75.00B.

Hagglund, Lars, to Landstingens Inkopscentral. Method of producing castings or other mouldings by means of vacuum suction of flexible containers holding granular material. 3,962,395, Cl. 264-91.000.

Hagiwara, Yoshiro; Suzuki, Toshiyuki; and Imai, Akira. Method and apparatus for manufacturing seamless material-filled capsules. 3,962,383, Cl. 264-4.000.

Hall, Judge H., to TRW Inc. Method for molding fiber reinforced composite tube. 3,962,394, Cl. 264-90.000.

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Hanifl, Paul, to International Paper Company. Urine metering and collection system. 3,961,529, Cl. 73-219.000.
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Hans Kolb KG: *See—*
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Hardinge Brothers, Inc.: *See—*
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Hardy, Samuel G.; and Peterson, Joseph L., to General Electric Company. Rotating disc excess consumption watthour meter with restraining means movably mounted on the disc. 3,962,632, Cl. 324-137.000.
Harlo Products Corporation: *See—*
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Harp, James L., Jr. Internal combustion engine with power recovery turbine. 3,961,484, Cl. 60-624.000.
Harris, Darrel W.; Green, Robert A.; and Grigsby, Donald M., to United States of America, Navy. Method for making incendiary lines for ordnance. 3,961,554, Cl. 86-1.00R.
Harris, James T., to Goodyear Tire & Rubber Company, The. Fluid container mounting method and apparatus. 3,961,728, Cl. 222-180.000.
Harrop, William H., to Rohm and Haas Company. Tackifier for rubber. 3,962,156, Cl. 260-5.000.
Harshaw Chemical Company, The: *See—*
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Hartman, Donn A.; and Cloud, Charles E., to R. A. Jones & Company Inc. Apparatus for shingling and packing of articles. 3,961,697, Cl. 198-25.000.
Hartman, Marvis E.: *See—*
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Chang, Wen-Hsuan; and Hartman, Marvis E., 3,962,522.
Hartmann, Hans. Immersion filter. 3,962,087, Cl. 210-150.000.
Harvey, George Arthur, to U.M.E.C.-Boydell (Belting) Limited. Conveyor belts. 3,961,540, Cl. 74-239.000.
Haschke, Heinz; and Morlock, Gerhard, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for improving the wettability of natural or synthetic zeolites. 3,962,132, Cl. 252-430.000.
Hasenwinkle, Earl Dean. Log cutting and rejoining process. 3,961,654, Cl. 161-36.000.
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Haskell, Barin Geoffry, to Bell Telephone Laboratories, Incorporated. Conditional replenishment video encoder with sample grouping and more efficient line synchronization. 3,962,535, Cl. 178-6.000.
Haskett, Philip R.; Elges, Carl H., III; Bauer, Donald J.; and Lindstrom, Roald E., to United States of America, Interior. Hydrometallurgical process for copper recovery from sulfide ores. 3,961,942, Cl. 75-101.0BE.
Hasuda, Minoru; and Yamada, Yasuo. Tape stringer for sliding clasp fasteners. 3,961,652, Cl. 139-384.00B.
Hatch, Robert A.: *See—*
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Hayashida, Takemi: *See—*
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Hayes, John C., to Universal Oil Products Company. Hydroprocessing of hydrocarbons. 3,962,359, Cl. 260-667.000.
Hayes, John C., to Universal Oil Products Company. Alkylaromatic isomerization process. 3,962,360, Cl. 260-668.00A.
Haynes, Robert W. Liquid dispensing apparatus. 3,961,730, Cl. 222-231.000.
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Heiman, Richard I.; and Hult, David R., to Vernco Corporation. Vacuum cleaner with an impermeable collector bag. 3,961,921, Cl. 55-429.000.
Heimann, Fred G., to Fruehauf Corporation. Method of assembling roof sheets to roof bows. 3,962,015, Cl. 156-295.000.
Heimbach, Heinrich: *See—*
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Heimberger, Helmut, to Opti-Holding AG. Method of making slide-fastener stringers. 3,962,007, Cl. 156-73.100.
Heimbigner, Gary L., to Rockwell International Corporation. Coded counting sequence and logic implementation thereof to drive a display pattern. 3,962,701, Cl. 340-336.000.
Helgesson, Claes Ivar, to Arbman Development AB. Method and thermometer for measuring temperature by determination of saturation of a solvent having temperature dependent characteristics. 3,961,530, Cl. 73-339.00R.
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Helton, Eugene L.; Gutman, Nathan; and Ribbing, Donald E., to Caterpillar Tractor Co. Bulldozer blade with improved tip and end bit. 3,961,788, Cl. 172-777.000.
Hendry, James W., to Ex-Cell-O Corporation. Method of injection molding a foamable thermoplastic material. 3,962,387, Cl. 264-50.000.
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Hennart, Claude; and Dulat, Marcel Louis, to Airwick Industries, Inc. Insecticide evaporator comprising DDVP with synergized benzodioxole compound as stabilizer. 3,962,415, Cl. 424-19.000.
Henningsson, Bjorn: *See—*
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Henrich, Gaston; and Gillet, Philippe, to Societe Chimique des Charbonnages. Isomerization and separation of cymenes from mixtures containing same. 3,962,366, Cl. 260-674.00A.
Henze, Walter J.; and Thein, San, to Penn Fishing Tackle Mfg. Co. Trolling apparatus. 3,961,438, Cl. 43-27.400.
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Hertel, Hasso; Gronen, Willy; and Kaiser, Hans, to Hoechst Aktiengesellschaft. Process for dyeing textile material of polyester fiber/cellulose blends. 3,961,884, Cl. 8-21.00C.
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Hunt, Walter G.; and Belz, Ray J., to Anheuser-Busch, Incorporated. Acid treated cationic starch in the flocculation and dewatering of sludge. 3,962,079, Cl. 210-47.000.
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Itoh, Takuji; Miura, Tadashi; and Akitsuki, Ikuo, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for producing lubricating oils. 3,962,071, Cl. 208-58.000.
Itoh, Yoshio: *See—*
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Jaffa, David, to Precision Screen Machines Inc. Method and apparatus for effecting transfer printing. 3,961,388, Cl. 8-2.50R.
Jago, John James; and Billington, Colin, to Pilkington Brothers Limited. Detection and reduction of roll bowing. 3,961,928, Cl. 65-29.000.
Jahnke, Richard William; and Swaney, Russell Lee, to Lubrizol Corporation, The. Method of treating metal surfaces. 3,961,992, Cl. 148-6.15R.
Jamaux, Joseph Auguste, to Societe d'Etudes de Machines Thermiques. Method and device for cleaning a supercharging set powering turbine driven by the exhaust gases of a heat engine. 3,961,482, Cl. 60-606.000.
Jamison, Joel Dexter, to Hercules Incorporated. Insecticidal use of O,O-dialkyl phosphorodithioate and phosphorothioate esters of oxazolidine-2,4-dione derivatives. 3,962,431, Cl. 424-200.000.
Jamison, Richard S., to Hughes Aircraft Company. Radar microwave lobing systems. 3,962,705, Cl. 343-16.00M.
Jaquet, Henri. Apparatus for orienting and maintaining a rod in any direction. 3,961,854, Cl. 403-59.000.
Jasinski, Raymond J., to Texas Instruments Incorporated. Regenerating electrode for electrochromic display cell. 3,961,842, Cl. 350-160.00R.
Jean Walterscheid GmbH: *See—*
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Jelling, Murray; Kahn, Alexander; Moore, Ernest George; and Friedman, Michael, to U.S. Dynamics Corporation, a part interest. Bagging apparatus with bag spreading device and braking device. 3,961,460, Cl. 53-64.000.
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Jezowski, Randolph M., to Signet Tool and Engineering, Inc. Quick-locking machine stop. 3,961,557, Cl. 90-11.00E.
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Johnson, Douglas M., to Fluoroware, Inc. Reinforced wafer basket. 3,961,877, Cl. 432-253.000.
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Johnson, Thomas B. Method and apparatus for degassing liquids. 3,961,918, Cl. 55-170.000.
Johnston, Douglas, to John Blue Company Division of Subscription Television, Inc. Tramper for cotton module maker. 3,961,572, Cl. 100-53.000.
Johnston, Howard, to Dow Chemical Company, The. H'-(4-((6-chloro-2-pyridinyl)oxy)phenyl)-N-methyl-N-(1-methyl-2-propynyl)urea. 3,962,265, Cl. 260-295.00E.
Johnston, William G.; and Milz, Wendell C., to Aluminum Company of America. Dry powder lubricant. 3,962,103, Cl. 252-22.000.
Jones, David William, to Triplex Safety Glass Company Limited. High-voltage liquid-cooled apparatus and supply leads therefor. 3,962,530, Cl. 174-15.00C.
Jones, Dennis A., to Amax Resource Recovery Systems, Inc. Lightweight aggregate. 3,961,973, Cl. 106-98.000.
Jones, Hugh L., to Xerox Corporation. Electrostatic printing machine. 3,961,849, Cl. 355-11.000.
Jones, John Paul, Jr., to Air Products and Chemicals, Inc. Apparatus for making miniature layer resistors on insulating chips by digital controls. 3,961,599, Cl. 118-6.000.
Jones, Raymond Henry: *See—*
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Journee, Paul. Double strip windscreen-wiper blade. 3,961,395, Cl. 15-250.360.
Juhlin, Lars-Erik; and Liss, Gote, to Allmanna Svenska Elektriska Aktiebolaget. Convertor station with parallel-connected static convertors. 3,962,625, Cl. 321-27.00R.
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Kaltner, Hermann, to Volkswagenwerk Aktiengesellschaft. Engine cooling arrangement. 3,961,605, Cl. 123-41.050.
Kamimura, Tomohisa; and Suzuki, Makoto, to Sony Corporation. Magnetic rotary head recorder with automatic tape loading and unloading. 3,962,727, Cl. 360-85.000.
Kan, Hirofumi: *See*—
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Kane, Jack; and Pedersen, Richard Alan, to Bell Telephone Laboratories, Incorporated. TTL compatible logic gate circuit. 3,962,590, Cl. 307-214.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
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Kaneko, Mikio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automobile fire fighting apparatus. 3,961,669, Cl. 169-62.000.
Kannegiesser, Martin; and Juraschek, Richard, to Herbert Kannegiesser Kommanditgesellschaft. Device for pressing articles of clothing. 3,961,733, Cl. 223-57.000.
Kanro Co. Ltd.: *See*—
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Kapsy, Robert J., to Briggs & Stratton Corporation. Fuel tank filler cap with improved vent. 3,961,724, Cl. 220-371.000.
Karayannis, Nicholas M.; Khelghatian, Habet M.; and Skryantz, John S., to Standard Oil Company. Dechlorination of high yield polyolefins using neutral phosphoryl esters. 3,962,203, Cl. 528-486.000.
Karlsson, Alf Hugo, to SCA Development Aktiebolag. Method of preparing size. 3,961,976, Cl. 106-186.000.
Karoly, Gabriel: *See*—
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Karpman, David Bentsionovich: *See*—
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Kashuba, Andrew, Jr., to Stiffel, Henry R. Coin collecting system for parking meters. 3,961,744, Cl. 232-16.000.
Kathawala, Faizulla G., to Sandoz, Inc. Lipidemia treatment with p-phenoxy-alkylphenone compositions. 3,962,459, Cl. 424-331.000.
Katner, Allen S., to Eli Lilly and Company. 1H-Tetrazole-1-acetate esters and acids and process therefor. 3,962,272, Cl. 260-308.00D.
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Katzen, Sol. Preserved nutrients and products. 3,962,416, Cl. 424-19.000.
Kauffman, Karl C.: *See*—
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Kauffman, William J., to Armstrong Cork Company. Linear polyesters based on phenylisocyanurate and processes for preparing same. 3,962,188, Cl. 260-75.00N.
Kauffman, William J., to Armstrong Cork Company. Linear isocyanurate polyesters and processes for preparing same. 3,962,191, Cl. 260-75.00N.
Kauffman, William J., to Armstrong Cork Company. Linear polyesters containing isocyanurate rings and processes for preparing same. 3,962,192, Cl. 260-75.00N.
Kaufman, John D.: *See*—
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Kaup, Friedel; and Warnke, Heinrich, to Miele & Cie. Process and device for electrophoretically plating metal parts. 3,962,059, Cl. 204-181.000.
Kawada, Hirohito: *See*—
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Kawasaki, Toshikazu, to Daihatsu Motor Co., Inc. Control device for electric vehicle. 3,962,612, Cl. 318-139.000.
Kawase, Ken-ichiro; Mitsuhashi, Sadayuki; Wakamatsu, Kazutoshi; and Mikami, Nobuo, to Nippon Electric Company Limited. Electromagnetic switch. 3,962,659, Cl. 335-196.000.
Kawashima, Koji; and Umeda, Keiji, to Director of National Food Research Institute. Preparation of water-insoluble enzymes. 3,962,038, Cl. 195-68.000.
Kawneer Company, Inc.: *See*—
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Kearns, Thomas M.; and Ferris, Kenneth D., to United States of America, Navy. Gun launched reconnaissance system. 3,962,537, Cl. 178-6.800.
Keckler, Dan L. Customer-operated merchandise locating device. 3,961,435, Cl. 40-130.00R.
Kefalos, Gust. Catamaran watercraft. 3,961,590, Cl. 114-61.000.
Keller, Wolfgang, to Siemens Aktiengesellschaft. Apparatus for crucible-free zone melting of semiconductor crystal rods including oscillation dampening material. 3,961,906, Cl. 23-273.0SP.
Kelley, Robert George: *See*—
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Kendall, Don L.; and Matzen, Walter T., to Texas Instruments Incorporated. Large value capacitor. 3,962,713, Cl. 357-14.000.
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Kenyon, Ernest M.; Berkowitz, Daniel; and Ayoub, John A., to United States of America, Army. Apparatus for continuous microwave sterilization of food in pouches. 3,961,569, Cl. 99-451.000.
Keough, John E., to Raymond Lee Organization, Inc., The, a part interest. Toy space vehicle payload for a kite. 3,961,764, Cl. 244-155.00R.
Kerlin, Eliot E.: *See*—
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Kermode, David W., to United States of America, Navy. System for reducing radio communication frequency bandwidth and increasing number of channels available. 3,962,639, Cl. 325-59.000.
Kern, Rudolf: *See*—
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Kerst, Al F., to Monsanto Company. Substituted ethane diphosphonic acids and salts and esters thereof. 3,962,318, Cl. 260-502.40P.
Kersten, Gunter; Aldinger, Ulrich; Knodel, Emil; and Knoblauch, Rainer, to Robert Bosch GmbH. Multiple pump assembly. 3,961,562, Cl. 91-492.000.
Kerwin, Richard G.: *See*—
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Kessler, Jean, to Societe Kessler S.A. Artificial cross-country skiing path. 3,961,751, Cl. 238-10.00R.
Khanna, Ravi, to Eastman Kodak Company. Suspension polymerization process. 3,962,197, Cl. 526-79.000.
Khelghatian, Habet M.: *See*—
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Kiehs, Karl; Huber, Rolf; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Carbamate. 3,962,316, Cl. 260-479.00C.
Kienzle Apparate GmbH: *See*—
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Kilen, Joseph-Bernard Leon. Apparatus for recording discontinuities. 3,961,522, Cl. 73-67.000.
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Kindig, James K.; and Turner, Ronald L., to Hazen Research, Inc. Process for treating coal to make it resistant to spontaneous combustion. 3,961,914, Cl. 44-1.00R.
King, Frederick David, to Northern Electric Company Limited. Semiconductor optical modulator. 3,962,714, Cl. 357-19.000.
King, James R.; Cohen, Hyman L.; and Minsk, Lewis M., to Eastman Kodak Company. Novel polymers and photographic elements containing same. 3,962,527, Cl. 428-500.000.
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Kitai, Kiyoshi; Nakamura, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, to Seiko Koki Kabushiki Kaisha. Exposure time control circuit. 3,962,709, Cl. 354-51.000.
Kitamura, Nobuo; and Mogi, Takao, to Sony Corporation. Channel indicator device. 3,962,642, Cl. 325-455.000.
Klak, Roland: *See—*
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Klein, Eric, to Foster Wheeler Energy Corporation. Heat transfer tubes with internal extended surface. 3,961,741, Cl. 228-144.000.
Kleiner, Hans-Jerg, to Hoechst Aktiengesellschaft. Process for preparing halogenomethane-phosphonic acid dihalides. 3,962,324, Cl. 260-543.00P.
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Kline, Richard H., to Goodyear Tire & Rubber Company, The. Stabilized polymers of ditertiary alkyl-4-hydroxybenzyloxy alkyl acrylates and dienes. 3,962,187, Cl. 260-62.000.
Klotz, Heinrich: *See—*
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Knaell, Kenneth Kay. Twist drill sharpening apparatus. 3,961,450, Cl. 51-219.00R.
Knapp, Edward J., Jr., to Chase-Shawmut Company, The. Support plates for a helically wound fusible element. 3,962,666, Cl. 337-159.000.
Knapp, Edward J., Jr., to Chase-Shawmut Company, The. Electric low-voltage fuse. 3,962,668, Cl. 337-228.000.
Knippenberg, Wilhelmus Franciscus; and Verspui, Gerrit, to U.S. Philips Corporation. Method of manufacturing silicon carbide crystals. 3,962,406, Cl. 423-345.000.
Knoblauch, Karl: *See—*
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Binnig, Fritz; Raschack, Manfred; and Treiber, Hans-Joerg, 3,962,449.
Knop, Karl, to RCA Corporation. Focused-image hologram system providing increased optical readout efficiency. 3,961,836, Cl. 350-3.500.
Knutson, Dale A., to Applied Power Inc. Proportional force amplifier. 3,961,561, Cl. 91-378.000.
Kobayashi, Fumio, to Sansui Electric Co., Ltd. Sound reproducing devices. 3,962,544, Cl. 179-1.00E.
Kobayashi, Kenji: *See—*
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Kocher, Ernst; Steffen, Jurg; and Herziger, Gerd Bernd. Method and apparatus for drilling watch jewels or other workpieces by means of laser beams. 3,962,558, Cl. 219-121.0LM.
Koda, Hiroyuki; Izumita, Toshiaki; Gomyo, Shiro; and Inoue, Yoshio, to Mitsubishi Gas Chemical Company, Inc. Coating composition and process for producing coated articles. 3,961,977, Cl. 106-287.0SB.
Koder, Manfred: *See—*
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Koenig, Roland; Deichelmann, Hermann; and Henkler, Herbert, to BASF Aktiengesellschaft. Thin film magnetic storage device. 3,962,690, Cl. 340-174.0ZB.
Koester, Eberhard; Wunsch, Gerd; Deigner, Paul; Uhl, Karl; Stumpfl, Werner; and Steck, Werner, to BASF Aktiengesellschaft. Manufacture of magnetic materials which exhibit exchange anisotropy. 3,961,990, Cl. 148-6.300.
Kohjin Co., Ltd.: *See—*
Matsuo, Kazuto; Araki, Michiya; Matsugu, Tomoyuki; and Mikami, Takahito, 3,962,398.
Kohno, Mitsuo; Igarashi, Tsuneo; and Nomura, Minoru, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyethylene-1,2-diphenoxyethane-4,4′-dicarboxylate uniaxially stretched films of good dimensional stability and anti-fibrillation. 3,962,183, Cl. 260-47.00C.
Koizumi, Masami, to Ricoh Co., Ltd. Method of and device for testing movable magnetic heads for ability to trace a predetermined spiral magnetic track without deviating therefrom. 3,962,724, Cl. 360-31.000.
Kokado, Naoyuki, to Tokyo Shibaura Electric Co., Ltd. Device for extracting a predetermined synchronizing signal from a composite synchronizing signal. 3,962,540, Cl. 178-69.5TV.
Komatsu, Toshio: *See—*
Yoshikawa, Yoshio; Otsuka, Sadao; Amemiya, Akira; and Komatsu, Toshio, 3,962,073.
Komuro, Yoshiyuki: *See—*
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Konishi, Akihiko: *See—*
Yonemitsu, Eiichi; Sugio, Akitoshi; and Konishi, Akihiko, 3,962,180.
Konishiroku Photo Industry Co., Ltd.: *See—*
Fujiwhara, Mitsuto; Kasai, Keiji; Nakagawa, Yoshinobu; Tokura, Hiroshi; Itoh, Kenji; and Muramoto, Seiji, 3,961,959.
Konovalov, Boris Leonidovich; Glider, Evgeny Khaimovich; Gradov, Oleg Borisovich; Karpman, David Bentsionovich; Spivak, Boris Volkovich; Chigirinsky, Alexandr Abramovich; Kildishev, Vasily Semenovich; Linetsky, Genrikh Nukhimovich, deceased; and by Linetskaya, Ella Semenovna, administrator. Rotor winding of electric machines. 3,962,594, Cl. 310-61.000.
Koolen, Jan W. A. M.: *See—*
Langbroek, Johannes; and Koolen, Jan W. A. M., 3,961,665.
Koppel, Gary A., to Eli Lilly and Company. 7-Methoxycephalosporins. 3,962,232, Cl. 260-243.00C.
Koppers Company, Inc.: *See—*
Gaydos, Robert M.; Guziak, Leonard F.; and Maxwell, Robert W., Jr., 3,962,365.
Korbacher, Werner: *See—*
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; Zundorf, Dieter; and Horbel, Hugo, 3,962,129.
Korger, Heinz, to Hannes Marker. Heel-holding device for ski bindings. 3,961,801, Cl. 280-626.000.
Kornblum, Nathan, to Purdue Research Foundation. Nitro group displacement. 3,962,053, Cl. 204-158.00R.
Kornfeld, Edmund C.; and Bach, Nicholas J., to Eli Lilly and Company. Oxidation of selectively protected 2,3-dihydro-6-methyl-8-hydroxy-9-ergolenes. 3,962,253, Cl. 260-285.500.
Korom, Arpad: *See—*
Thommen, Werner; and Korom, Arpad, 3,962,592.
Koshar, Robert J.: *See—*
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Kosley, Raymond W., Jr.: *See—*
Bauer, Victor J.; and Kosley, Raymond W., Jr., 3,962,259.
Kotera, Yoshihide; Todo, Naoyuki; and Fukuda, Kenzo, to Agency of Industrial Science & Technology. Process for production of hydrogen and sulfur from hydrogen sulfide as raw material. 3,962,409, Cl. 423-571.000.
Kovacs, Daniel Charles, to Wean United, Inc. Tension device for a rolling mill and the like. 3,961,510, Cl. 72-20.000.
Kozai, Tetsuo, to Morita Pump Kabushiki Kaisha. Ladder working limit based ladder stopping device for aerial ladder truck. 3,961,685, Cl. 182-19.000.
Koziol, Konrad: *See—*
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Kozuka, Koji: *See—*
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Kraina, Jack H.: *See—*
Mankowski, Aleksander; Poplawski, Eugene M.; and Kraina, Jack H., 3,961,827.
Kramp, Ekkehard; Lenoir, John; Marthaler, Max; and Schaller, Robert, to Ciba-Geigy AG. Dye bleach preparation for the photographic silver dye bleach process. 3,961,957, Cl. 96-53.000.
Krapcho, John; Turk, Chester F.; and Rovnyak, George C., to E. R. Squibb & Sons, Inc. 3A,4,6,7-Tetrahydro-3-phenyl-7-(phenylalkylene)-thiopyrano[4,3-C]pyrazole-2(3H)-alkanamine, and analogs. 3,962,222, Cl. 260-240.00F.
Kravchuck, Robert T., to Texas Instruments Incorporated. Keyboard with versatile switch support structures. 3,962,556, Cl. 200-5.00R.
Krespan, Carl George, to Du Pont de Nemours, E. I., and Company. Trifluoromethylmalonyl fluoride. 3,962,325, Cl. 260-544.00F.
Kretschmar, Rickey: *See—*
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Kriege, Wolfgang, to Jenaer Glaswerk Schott & Gen. Optical fiber display device. 3,962,702, Cl. 340-380.000.
Krieger, LaVerne M. Gas saving tactile device. 3,961,598, Cl. 116-114.0AE.
Kroger Company, The: *See—*
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KTI Chemical, Inc.: *See—*
Perruccio, Salvatore M., 3,962,108.
Ku, Paul H. Y. Portable air conditioner. 3,961,496, Cl. 62-459.000.
Kubo, Hiroshi, to Sumitomo Electric Industries, Ltd. Evaporative cooling power cable line. 3,962,529, Cl. 174-15.00C.
Kubo, Takehisa: *See—*
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Kubota, Eishi: *See—*
Nakamoto, Yuzuru; Kubota, Eishi; and Suzuki, Fukushi, 3,961,740.
Kuhl, Jurgen; and Spitschan, Hans-Jorg, to Carl Zeiss-Stiftung. Method and apparatus for automatic generation of phase-adapted coherent secondary radiation in a non-linear crystal. 3,962,576, Cl. 250-201.000.
Kuhle, Engelbert; Klauke, Erich; and Eue, Ludwig, to Bayer Aktiengesellschaft. Sulfonyloxyphenylurea compounds and herbicidal compositions. 3,962,306, Cl. 260-456.00A.
Kuhle, Engelbert: *See—*
Schlee, Hans Georg; Sasse, Klaus; and Kuhle, Engelbert, 3,962,327.
Kuhlenschmidt, Floyd E.: *See—*
Kuhlenschmidt, Harold L.; and Kuhlenschmidt, Floyd E., 3,962,088.
Kuhlenschmidt, Harold L.; and Kuhlenschmidt, Floyd E., to Elberfeld Concrete Block Co., Inc. (Entire). Concrete block assembly. 3,962,088, Cl. 210-170.000.
Kuhns, Garrett D.; Astorp, Norman E.; Mullen, Richard V.; and Thomas, John Ellwood, to Economics Laboratory, Inc. Spray and foam producing nozzle apparatus. 3,961,754, Cl. 239-289.000.
Kukolja, Stjepan, to Eli Lilly and Company. Azetidinone acetic acid intermediates for 5-epi-penicillins. 3,962,276, Cl. 260-326.00S.
Kukolja, Stjepan P.; and Lammert, Steven R., to Eli Lilly and Company. 3-Nitrooxycepham compounds and process for preparing desacetoxycephalosporins therefrom. 3,962,226, Cl. 260-243.00C.
Kukuruzinski, Raymond. Disposable clinical thermometer. 3,961,532, Cl. 73-371.000.
Kumar, Surinder, to Quaker Oats Company, The. Textured protein product and process. 3,962,335, Cl. 426-574.000.
Kumar, Surinder, to Quaker Oats Company, The. Meat-like textured protein product and process. 3,962,481, Cl. 426-574.000.
Kumasaka, Archie M., to United States of America, Army. Mechanical guy cable control device. 3,961,771, Cl. 254-184.000.
Kumiai Chemical Industry Co., Ltd.: *See—*
Wakamori, Shigeki; Ogawa, Haruki; Yamaguchi, Masayoshi; and Kanamori, Seigo, 3,962,457.
Kundrat, Harry: *See—*
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Kurata, Yoshio. Hammer for sheet metal. 3,961,519, Cl. 72-465.000.
Kurihara, Haruki: *See—*
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Kurio, Noriyuki, to Toyo Kogyo Co., Ltd. Corner seal means for rotary piston type engines. 3,961,871, Cl. 418-121.000.
Kuroda, Nobuyuki: *See—*
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Kurokawa, Masayuki, to Yamagiwa Electric Co. Ltd. Lighting apparatus. 3,962,678, Cl. 240-81.0BD.
Kutterer, Gerhard: *See—*
Huttner, Robert; and Kutterer, Gerhard, 3,962,585.
Kuyama, Hiroshi; and Higosaki, Nobuyuki, to Tokyo Organic Chemical Industries, Inc. Fungicidal/algicidal composition for non-medical uses. 3,961,933, Cl. 71-67.000.
Kyorin Seiyaku Kabushiki Kaisha: *See—*
Irikura, Tsutomu, 3,962,249.
La Technique Integrale S.A.: *See—*
Fund, Jean Claude; and Detraz, Jacques, 3,961,541.
Laboratories Made, S.A.: *See—*
Roldan, Cristobal Martinez; Brana, Miguel Fernandez; and Berlanga, Jose Maria Castellano, 3,962,243.
Lademann, Rudolf; and Landauer, Franz, to Hoechst Aktiengesellschaft. Process for the preparation of 5-chloro-2-toluidine. 3,962,336, Cl. 260-579.000.
Lado, Ernest A.: *See—*
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Ladouceur, Harold A., to Multifastener Corporation. Method of installing a fastener. 3,961,412, Cl. 29-445.000.
Ladouceur, Harold A.: *See—*
Goodsmith, Dale H.; and Ladouceur, Harold A., 3,961,408.
Lambert, Herbert L.: *See—*
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Lammert, Steven R.: *See—*
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Lamoreaux, Charles L. Gas-vapor separating and gas purifying apparatus. 3,961,919, Cl. 55-184.000.
Lampert, Heinz, to Fa. Werner Looser, Maschinenbau. Piston and cylinder assembly. 3,961,565, Cl. 92-117.00R.
Landauer, Franz: *See—*
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Landstingens Inkopscentral: *See—*
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Lang, George Henry, to Imperial Chemical Industries Limited. Process for producing 2:2'- or 4:4'-bipyridyls. 3,962,268, Cl. 260-296.00D.
Langbroek, Johannes; and Koolen, Jan W. A. M., to Ultracentrifuge Nederland N.V. Apparatus for separating a product of sublimation from a gas. 3,961,665, Cl. 165-61.000.
Lange, Karlheinz, to Dr. -Ing. H.c.F. Porsche Aktiengesellschaft. Installation for the catalytic afterburning of exhaust gases in the exhaust gas system of an internal combustion engine. 3,961,478, Cl. 60-277.000.
Lange, Richard Michael, to Lubrizol Corporation, The. Lubricating compositions. 3,962,105, Cl. 252-56.00R.
Langenfeld, Michel, to Pont-A-Mousson S.A. Device for the transmission over a distance of indications in particular of a meter. 3,962,691, Cl. 340-203.000.
Langer, Heinz, to Seitz-Asbest-Werke Theo & Geo Seitz. Filter unit. 3,962,090, Cl. 210-231.000.
Lappin, Gerald R.: *See—*
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La Rochelle, John H.: *See—*
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Lars-Jos, Pehr. Glove and method for the production of said glove. 3,961,377, Cl. 2-169.000.
Larue, Pierre; and Beaumont, Pierre, to Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.). Ignitor element for a generator of hot gas. 3,961,581, Cl. 102-99.000.
Lathrop, Francis M., II. Range extending attachment for use in a price display mechanism. 3,962,568, Cl. 235-132.00R.
Laudon, Monique: *See—*
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Laughrey, Richard A.: *See—*
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Lawson, James N., to Musselwhite Enterprises, Inc., a part interest. Safety ring. 3,961,502, Cl. 66-163.000.
Leavens, Roland B.; and McNair, Mark G., to Diamond Fruit Growers, Inc. Fruit tray package. 3,962,469, Cl. 426-108.000.
Lectromelt Corporation: *See—*
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Leech, Edward J., to Photocircuits Division of Kollmorgen. Composition and method for neutralizing and sensitizing resinous surfaces and improved sensitized resinous surfaces for adherent metallization. 3,962,496, Cl. 427-306.000.
Leftheris, Basil P., to Grumman Aerospace Corporation. Method of welding metals using stress waves. 3,961,739, Cl. 228-110.000.
Leftheris, Basil P.: *See—*
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Leggett, Norman Derek: *See—*
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Lehr, David R.; and Pollard, James H., to Zenith Radio Corporation. Cathode ray tube or funnel shipping and/or storage container. 3,961,707, Cl. 206-419.000.
Leitereg, Theodore J.; Guadagni, Dante G.; and Teranishi, Roy, to United States of America, Agriculture. Process for the production of bicyclo decenone derivatives. 3,962,339, Cl. 260-586.00C.
Lemahieu, Ronald Andrew: *See—*
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Lemberger, Alan D.: *See—*
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Lemke, James U.; and Lentz, Robert A., to Eastman Kodak Company. Magnetic-tape cartridge-loaded portable video camera using prerecorded timing signals to control the video time base. 3,962,725, Cl. 360-36.000.

Lenoir, John: *See—*
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Lentz, Robert A.: *See—*
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Lerner, Martin, to Zenith Radio Corporation. Method for etching shadow mask and regenerating etchant. 3,962,005, Cl. 156-16.000.

Leskovec, Edward V., to Towmotor Corporation. Spacer and noise suppressor cushions for lift truck mast units. 3,961,689, Cl. 187-95.000.

Lester, William W.; and Mason, Lawrence V., to Gillette Company, The. Liquefied gas alarm device. 3,961,597, Cl. 116-103.000.

Leung, Kam Fong, to Dallas Research Enterprises. Vane separator. 3,961,922, Cl. 55-440.000.

Lever Brothers Company: *See—*
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Lever, Ray Clarence; and Wilkus, Edward Vincent, to General Electric Company. Electrical conductor insulated with filled polymeric compounds. 3,962,531, Cl. 174-110.0PM.

Leverenz, Klaus: *See—*
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Levey, Horace B.: *See—*
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Levin, Norman Arthur; and Kaplan, Leonard Louis, to Johnson & Johnson. Enzyme-containing denture cleanser tablet. 3,962,107, Cl. 252-100.000.

Levon, Ernest F., to G. D. Searle & Co. 1-Azidoalkylimidazoles. 3,962,274, Cl. 260-309.000.

Lewis, Gerald F. Downrigger. 3,961,437, Cl. 43-27.400.

Leyh, Joseph C.: *See—*
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LFE Corporation: *See—*
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Li, Tao P., to Monsanto Company. Ammoxidation process. 3,962,309, Cl. 260-465.300.

Li, Tao P.; and Hobbs, Charles W., to Monsanto Company. Ammoxidation process. 3,962,310, Cl. 260-465.300.

Liebrand, Norbertus Johannes Josephus: *See—*
Arnoldussen, Theodorus Franciscus; Hoeks, Antonius Johannes Ludovicus Maria; and Liebrand, Norbertus Johannes Josephus, 3,961,760.

Liersch, Manfred; and Nuesch, Jakob, to Ciba-Geigy Corporation. Process for the manufacture of 7-amino-cephalosporanic acid-type compounds. 3,962,036, Cl. 195-29.000.

Life Savers, Inc.: *See—*
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Lilly Industries, Ltd.: *See—*
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Evans, Delme; Dunwell, David William; and Hicks, Terence Alan, 3,962,452.

Lilov, Dimitre, to P. Ferrero & C. S.p.A. Method of making crust liqueurs by annular flow cooling of the hot aqueous filling liquid. 3,962,473, Cl. 426-282.000.

Limekiller, Andrew Henry: *See—*
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Linder, Donald L.; Eness, Orville M.; and Lynk, Charles N., Jr., to Motorola, Inc. Portable telephone system having a battery saver feature. 3,962,553, Cl. 179-41.00A.

Linder, Jerome; and Houlihan, William J., to Sandoz, Inc. Bromination process. 3,962,342, Cl. 260-592.000.

Lindley, John P.; and Rieden, James, to Itek Corporation. Electro-optic system with expanded power range. 3,962,577, Cl. 250-208.000.

Lindstrom, Roald E.: *See—*
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Lineberg, Birger David, to AB Volvo. Apparatus for the regulated cooling of hot objects for quenching or hardening purposes. 3,961,777, Cl. 266-114.000.

Linetskaya, Ella Semenovna, administrator: *See—*
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Link, Edwin A., to RTE Corporation. Combination fuse and bushing. 3,962,667, Cl. 337-202.000.

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Litenkova, Ljudmila Anatolievna: *See—*
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Lockheed Missiles & Space Company, Inc.: *See—*
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Loeliger, Peter, to Hoffmann-La Roche Inc. Preparation of cyclohexadiene compounds. 3,962,311, Cl. 260-468.00L.

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Lombardi, Anthony Joseph, to International Telephone and Telegraph Corporation. Buoyant cable antenna reeling system. 3,961,589, Cl. 114-16.00R.

Lopiccola, Joseph F.: *See—*
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Loshbough, Richard C.; Pryor, Edward G.; and Robaszkiewicz, Gerald D., to Reliance Electric Company. Value computing scale. 3,962,569, Cl. 235-151.330.

Loshbough, Richard C.; and Pryor, Edward G., to Reliance Electric Company. Scale with manual tare entry. 3,962,570, Cl. 235-151.330.

Lottridge, Lawrence A., to United Technologies Corporation. Organic matrix stacking head. 3,962,026, Cl. 156-584.000.

Loukes, David Gordon: *See—*
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Lovat, Richard. Tunnelling machine. 3,961,825, Cl. 299-33.000.

Love, Mahlon Lloyd, to Deere & Company. Vehicle final drive and wheel mounting. 3,961,679, Cl. 180-75.000.

Lowe, James C.: *See—*
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Lowry, Edna Earl. Aid for folding sheets and the like. 3,961,782, Cl. 270-61.00R.

Lubitzsch, Wolfgang, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Method and apparatus for loosening and spreading of filament tows. 3,961,396, Cl. 19-65.00T.

Lubrizol Corporation, The: *See—*
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Lucas, Gustave. Self-loading and self-unloading trailer. 3,961,718, Cl. 214-520.000.

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Luppi, Liberto, to Sandoz Ltd. Dialyser cartridge. 3,962,095, Cl. 210-321.00A.

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Lynch, Peter D., to Rader Companies, Inc. Valve shifting system. 3,961,643, Cl. 137-610.000.

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Mabille, Albert; de Aguirre, Inaki; and Marcilly, Christian, to Institut Francais du Petrole des Carburants et Lubrifiants. Process for selectively producing paraxylene. 3,962,363, Cl. 260-671.00M.
Machiele, Delwyn E., to Eastman Kodak Company. Novel method for the synthesis of 4-thio and 4-seleno ethers of 2-pyrazolin-5-ones. 3,962,273, Cl. 260-308.00D.
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MacLeay, Ronald Edward; and Sheppard, Chester Stephen, to Pennwalt Corporation. Tertiary aliphatic alpha-(sulfo)-azo compounds. 3,962,210, Cl. 260-192.000.
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Maitenaz, Paul, to Compagnie Europeenne pour l'Equipement Menager, CEPEM. Catalytically assisted pyrolytic self-cleaning oven. 3,962,561, Cl. 219-391.000.
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Marowsky, Ruthard. Weaving method and machine. 3,961,650, Cl. 139-291.00R.
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Matsushima, Kiyoshi; Miyamoto, Masao; and Fukazawa, Nobuo, to Bayer Aktiengesellschaft. Alkoxy-substituted benzyl dithiocarbamic acid esters. 3,962,304, Cl. 260-455.00A.
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Matthews, Joseph E. Dock fender assembly. 3,961,593, Cl. 114-219.000.
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Mauvernay, Roland Yves; Busch, Norbert; Moleyre, Jacques; Monteil, Andre; and Simond, Jacques, to Centre Europeen de Recherches Mauvernay "CERM". Ethers of n-propanol amine. 3,962,238, Cl. 260-247.20B.
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McCain, Jack L. Ground anchor. 3,961,451, Cl. 52-163.000.
McCall, Frank Boyes, to Ferranti, Limited. Analog A-C storage circuit employing a high gain amplifier. 3,962,651, Cl. 330-51.000.
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Millett, James A., to Lure Camera Ltd. Optical index and method for cameras and film processing. 3,961,850, Cl. 355-77.000.

Milligan, Frank. Hockey stick. 3,961,790, Cl. 273-67.00A.

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Miyamoto, Akira; Nagano, Mitsuyasu; Sato, Fumitaka; and Morishige, Kiyoshi, to Mitsubishi Gas Chemical Company, Inc. Glass fiber-reinforced polyamide resin molding material. 3,962,524, Cl. 428-435.000.

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Modgling, Tommie R., to United States of America, Navy. Apparatus for mechanically exercising bourdon tube gauge. 3,961,520, Cl. 73-4.00R.

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Morgan, David W., to Corning Glass Works. Reed switch construction. 3,961,970, Cl. 106-52.000.

Morgenstern, David M., deceased; by Morgenstern, Stanley, executor; Chattman, Harold M., executor; and by Cole, Allan R., executor, to Tenna Corporation. Electric adjusting means for azimuth and elevation adjustment. 3,961,543, Cl. 74-501.00M.

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Morokawa, Shigeru; Sekiya, Fukuo; Maruka, Ryuichi; and Nomura, Yasushi, to Citizen Watch Co., Ltd. Driving circuit for liquid-crystal display. 3,961,840, Cl. 350-160.0LC.

Morozov, Andrei Elizarovich: *See*—
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Morozowich, Walter, to Upjohn Company, The. Esters of $PGA_1$and p-tritylphenol. 3,962,289, Cl. 260-395.000.

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Mund, Konrad; and Schulte, Rolf, to Siemens Aktiengesellschaft. Electro-catalyst and process of manufacture. 3,961,987, Cl. 136-86.00D.

Munier, Rene, to Societe Industrielle pour la Construction de Materiels Automatiques S.I.C.M.A. Machine for automatically making pancakes. 3,961,567, Cl. 99-327.000.

Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; Zundorf, Dieter; and Horbel, Hugo, to Bergwerksverband GmbH. Impregnation of coke with an organic compound to produce a molecular sieve. 3,962,129, Cl. 252-428.000.

Murakami, Masahiro. Roller device. 3,961,694, Cl. 193-37.000.

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Murphy, Michael P.; and Riddel, John W., to General Motors Corporation. Solid state temperature responsive switch. 3,962,692, Cl. 340-228.00R.

Musselwhite Enterprises, Inc.: *See*—
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Nagakura, Akira; Akutagawa, Susumu; and Kurihara, Haruki, to Takasago Perfumery Co., Ltd. 1,2,6-Trimethyltricyclo[5,3,2,$0^{2,7}$-]dodeca-5-one. 3,962,340, Cl. 260-586.00G.

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Nakamura, Kenji; Matsushita, Keizo; Furuta, Shigetaro; and Totani, Kazuo, to Dai Nippon Toryo Kabushiki Kaisha. Liquid crystal electro-optical device. 3,961,843, Cl. 350-160.0LC.

Nakamura, Shinichi: *See*—
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Nakano, Seikou; Goto, Yukitaka; and Inoue, Takayuki, to Mitsubishi Petrochemical Company Limited. Polypropylene composition modified with porous filler and a radical generating agent. 3,962,157, Cl. 260-17.40R.

Nakanose, Tokumitsu. Thermoplastic resin tape for packaging. 3,962,508, Cl. 428-169.000.

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Neveu, Michael J. Lemon peeler. 3,961,418, Cl. 30-123.500.
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Nicol, Charles Henry; and Hays, Hugh Robert, to Procter & Gamble Company, The. Detergent compositions having improved soil release properties. 3,962,152, Cl. 252-551.000.
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Numa, Masao: *See*—
Narui, Hiroshi; Akune, Ikuo; Shinohara, Terumi; Numa, Masao; and Kobiki, Yosiya, 3,962,397.
Nussbaum, Gert. Rain storing tank. 3,962,084, Cl. 210-83.000.
Nuzzi, Francis J., to Photocircuits Division of Kollmorgan Corporation. Sensitized substrates for chemical metallization. 3,962,494, Cl. 427-304.000.
Oberhofer, Alfred W.; Benko, James J.; and Drozd, Joseph C., to Nalco Chemical Company. Automotive cleaner plus inhibitor. 3,962,109, Cl. 252-146.000.
O'Brien, David, to Fairchild Camera and Instrument Corporation. Oxide isolated integrated injection logic with selective guard ring. 3,962,717, Cl. 357-44.000.
O'Doherty, George O. P., to Eli Lilly and Company. Esters of 1-hydroxy-1H-imidazo-(4,5-b)-pyridines as herbicides. 3,961,937, Cl. 71-92.000.
Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.): *See*—
Larue, Pierre; and Beaumont, Pierre, 3,961,581.
Offutt, Carl R.; and Marcade, Roque Denis, to Whirlpool Corporation. Current limiting impedance network for dryer control. 3,962,617, Cl. 318-444.000.
Ogawa, Haruki: *See*—
Wakamori, Shigeki; Ogawa, Haruki; Yamaguchi, Masayoshi; and Kanamori, Seigo, 3,962,457.
Ogawa, Mutsuo, to Ricoh Co., Ltd. Facsimile set. 3,962,534, Cl. 178-6.000.

Oger, Jacques Francois, to Pont-A-Mousson S.A. Voussoir for a lining, and method for constructing the lining. 3,961,411, Cl. 29-283.000.

Ogura, Katsuyuki: *See—*
Tsuchihashi, Genichi; and Ogura, Katsuyuki, 3,962,281.

Ohbu, Misao; and Higuchi, Seijun, to Nippon Steel Corporation. Method for coating of corrosion-resistant molten alloy. 3,962,501, Cl. 427-433.000.

Ohloff, Gunther: *See—*
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Ohno, Kuniichiro: *See—*
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Ohyama, Isao: *See—*
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Oicles, Jeffrey A.; and Martin, Thomas F., to TRW Inc. Digital display apparatus having jitter correction. 3,962,567, Cl. 235-92.0EA.

Oike & Co., Ltd.: *See—*
Narui, Hiroshi; Akune, Ikuo; Shinohara, Terumi; Numa, Masao; and Kobiki, Yosiya, 3,962,397.

Oita, Katashi; and Lowe, James C., to Weyerhaeuser Company. Ruminant repellent from enzymatically putrefied lipoidal material. 3,962,425, Cl. 424-94.000.

Okada, Akira: *See—*
Mayama, Takeshi; Kobayashi, Toshiyuki; and Okada, Akira, 3,962,419.

Okamoto, Kazuo; and Kaibara, Nobuhiro, to Diesel Kiki Kabushiki Kaisha. Fuel injection device for diesel engines. 3,961,612, Cl. 123-139.00E.

Okazaki, Akira: *See—*
Furuno, Kouji; Okazaki, Akira; Matsubara, Syuzo; Shiba, Motoharu; and Shioya, Akitoshi, 3,962,429.

Okumura, Shinji: *See—*
Tsuchida, Takayasu; Yoshinaga, Fumihiro; and Okumura, Shinji, 3,962,034.

Okuno, Youichi; and Yokota, Hideo, to Canon Kabushiki Kaisha. Viewfinder for a single lens reflex camera. 3,962,710, Cl. 354-225.000.

Okutomi, Tsuneo: *See—*
Sasaki, Hiroshi; Okutomi, Tsuneo; Hosokawa, Tomoyoshi; Nawata, Yoshiharu; and Ando, Kunio, 3,962,455.

Okuzumi, Yuzi, to Goodyear Tire & Rubber Company, The. Process for preparing linear polyesters in the presence of metallic amino compounds. 3,962,193, Cl. 260-75.00R.

Old Fort International, Inc.: *See—*
Balhorn, Milo G., 3,961,874.

Olin Corporation: *See—*
Chiocchio, Louis R.; and Zirlis, Robert S., 3,962,120.
Schiessl, Henry W.; and Kaufman, John D., 3,962,113.

Oliver, Everett O.; and Millwee, John T. Band saw. 3,961,550, Cl. 83-574.000.

Ollman, Melvin L., to C-O, Inc. Apparatus for making truss members. 3,961,738, Cl. 228-5.100.

O'Neill, Joseph L., to Merck & Co., Inc. Sterilization of solid non-electrolyte medicinal agents employing sodium chloride. 3,962,430, Cl. 424-185.000.

Ono, Katuya; Kozuka, Koji; and Komuro, Yoshiyuki, to Toray Industries, Inc. Process for manufacturing a triple-wall container. 3,962,396, Cl. 264-98.000.

Ono Pharmaceutical Company: *See—*
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Onogawa, Yukio: *See—*
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Orcutt, John W., to Texas Instruments Incorporated. Multiple port multiple temperature thermally responsive valve. 3,961,749, Cl. 236-101.00D.

Orlova, Ljudmila Vladimirovna: *See—*
Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Orlova, Ljudmila Vladimirovna; and Shlyandin, Viktor Mikhailovich, 3,962,629.

Orris, Stephen Jay: *See—*
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Osbolt, Frank J. Crimping device. 3,961,518, Cl. 72-409.000.

O'Steen, James K., to United States of America, Navy. Air driven energy storing fuze safing and arming mechanism. 3,961,577, Cl. 102-70.20G.

Ostlund, Bernt; and Lindblom, Georg, to Allmanna Svenska Elektriska Aktiebolaget. Thyristor rectifier. 3,962,624, Cl. 321-27.00R.

Otsuka, Sadao: *See—*
Yoshikawa, Yoshio; Otsuka, Sadao; Amemiya, Akira; and Komatsu, Toshio, 3,962,073.

Otto, Charles W., to General Electric Company. Method of assembling a dyanamoelectric machine. 3,961,416, Cl. 29-596.000.

Outboard Marine Corporation: *See—*
Carpenter, Eugene C., 3,961,467.

Ovsttun, Torbjorn, to A/S Akers Mek. Verksted. Method for filling and emptying of cassions. 3,961,488, Cl. 61-46.000.

Owen, Clyde W., Sr. Aggregate materials washing apparatus. 3,961,637, Cl. 134-104.000.

Owens-Illinois, Inc.: *See—*
Rapp, James E., 3,961,969.
Rapp, James E., 3,962,000.

Owston, William J., to Lord Corporation. Method for improving adhesion between adhesives and polyester or other thermoplastic substrates. 3,962,498, Cl. 427-322.000.

Oxy Metal Industries Corporation: *See—*
Doty, Warren Russell; and Kinney, Timothy James, 3,962,497.

Ozawa, Takahisa, to Yugenkaisha Sankyo Furnace. Combustion equipment in which humid combustible excreta and disposed materials such as livestock excreta, paper sludge can be burnt spontaneously. 3,961,587, Cl. 110-8.00A.

P. Ferrero & C. S.p.A.: *See—*
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Pacciarini, Antonio: *See—*
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Pacifici, James G.; and Kelly, Charles A., to Eastman Kodak Company. Photosensitive compositions containing benzothiazole sensitizers. 3,962,055, Cl. 204-159.150.

Pacifici, James G.; and Kelly, Charles A., to Eastman Kodak Company. Photosensitive compositions containing benzimidazole sensitizers. 3,962,056, Cl. 204-159.150.

Pack, Marvin L.: *See—*
Ramacher, Barry; and Pack, Marvin L., 3,962,072.

Paddock, Paul F.; and Cramer, Jerry W., to Sunkist Growers, Inc. Method of and conveyor for transporting fragile objects. 3,961,701, Cl. 198-131.000.

Pagani, Giorgio, to Snam Progetti S.p.A. Sea water desalination apparatus. 3,961,658, Cl. 159-13.00A.

Pagano, Joseph F.: *See—*
Bowie, Betty Anne; and Pagano, Joseph F., 3,961,696.

Palau, Joseph, to Staeubli, Ltd. Heddle frame arrangement for a weaving machine. 3,961,649, Cl. 139-82.000.

Palisin, Stephen P., Jr., to Empire Plating Company, The. Coated metal article and method of coating. 3,961,993, Cl. 148-6.160.

Pallos, Ferenc M., to Stauffer Chemical Company. Acylformanidine thiocarbamates. 3,962,305, Cl. 260-455.00A.

Panken, Irving, to Mazer Corporation, The. Tissueless pre-printed spirit duplicating masters. 3,962,526, Cl. 428-488.000.

Panozzo, Camillo: *See—*
Brusa, Bruno; Panozzo, Camillo; and Zanini, Giovanni, 3,961,890.

Pansini, Andrew L. Swimming pool cleaning apparatus. 3,961,393, Cl. 15-1.700.

Pappo, Raphael: *See—*
Garland, Robert B.; and Pappo, Raphael, 3,962,291.

Papst, Georg; and Wrobel, Guenter, to Papst-Motoren KG. Radial flow fan. 3,961,864, Cl. 417-354.000.

Papst-Motoren KG: *See—*
Papst, Georg; and Wrobel, Guenter, 3,961,864.

Park, Arthur: *See—*
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Parker-Hannifin Corporation: *See—*
Rich, Beldon R.; Gallagher, Richard J.; and Berninger, John F., 3,961,564.

Parks, John B., to Syntex (U.S.A.) Inc. Method for immunizing nursing piglets against transmissible gastroenteritis(TGE) virus. 3,962,422, Cl. 424-89.000.

Parliment, Thomas H.; Clinton, William P.; Scarpellino, Richard; Soukup, Robert J.; and Epstein, Martin F., to General Foods Corporation. Enhancement of coffee flavor. 3,962,321, Cl. 426-535.000.

Parry, David W. Writing instrument. 3,961,852, Cl. 401-195.000.

Pascarella, Giorgio; and Salvemini, Francesco, to Tecneco S.p.A. Process for the purification of waste waters. 3,962,077, Cl. 210-23.00H.

Patel, Ambelal: *See—*
DiBattista, Anthony; and Patel, Ambelal, 3,962,123.

Paton, Hamilton Neil King; and Skilling, John B. Articulated railcar. 3,961,582, Cl. 105-3.000.

Paton, Hamilton Neil King; and Skilling, John B. Railway car truck. 3,961,584, Cl. 105-182.00R.

Pattantyus-Abraham, Tamas I., to Westinghouse Electric Corporation. Repeater coupler for power line communication systems. 3,962,547, Cl. 179-2.50R.

Peabody Barnes, Inc.: *See—*
Morgan, Arvid E., 3,961,758.

Pecak, William Eugene, to General Electric Company. Reactivation of a magnesium oxide catalyst. 3,962,126, Cl. 252-416.000.

Pedersen, Richard Alan: *See—*
Kane, Jack; and Pedersen, Richard Alan, 3,962,590.

Peet, Harvey K., to Sealol, Inc. Conversion kit. 3,961,799, Cl. 277-9.000.

Peetermans, Julien; Lobmann, Michele; Prevost, Jean-Marie; and Vascoboinic, Emil, to Recherche et Industrie Therapeutiques (R.I.T.). Live influenza type B virus vaccines and preparation thereof. 3,962,423, Cl. 424-89.000.

Pelosi, Stanford S., Jr., to Morton-Norwich Products, Inc. 3-(5-Aryl-2-furyl)-3-hydroxypropionic acids and ethyl esters. 3,962,284, Cl. 260-347.500.

Peng, Ting-Fu. Method and apparatus for adhering thermometer in liquid. 3,961,531, Cl. 73-353.000.

Penn Fishing Tackle Mfg. Co.: *See—*
Henze, Walter J.; and Thein, San, 3,961,438.

Pennwalt Corporation: *See—*
MacLeay, Ronald Edward; and Sheppard, Chester Stephen, 3,962,210.
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Percheron, Jean-Claude: *See—*
Alliot, Maurice; Beguin, Jean-Claude; Moutach, Michel; and Percheron, Jean-Claude, 3,961,995.
Peregrim, Frank: *See—*
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Peressini, Eugene R., to Hughes Aircraft Company. High power flowing gas laser with profiled electron beam excitation. 3,962,656, Cl. 331-94.5PE.
Perez, Antonio L. Locks. 3,961,506, Cl. 70-363.000.
Pericki, Vladimir: *See—*
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Perks, Arthur Thomas. Overhead storage apparatus. 3,961,711, Cl. 211-117.000.
Perrotti, Emilio: *See—*
Neri, Carlo; and Perrotti, Emilio, 3,962,250.
Perruccio, Salvatore M., to KTI Chemical, Inc. Chemical stripping solution. 3,962,108, Cl. 252-142.000.
Perstorp AB: *See—*
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Peters, Dierk D. Truss support connector. 3,961,455, Cl. 52-693.000.
Peters, George, to Lawrence Peska Associates, Inc., a part interest. Magnetic key lock and alarm. 3,962,695, Cl. 340-274.00R.
Peters, Werner: *See—*
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Schmalfeld, Paul; Rammler, Roland; Peters, Werner; Ahland, Erwin; Bock, Burkhard; and Lehmann, Joachim, 3,962,043.
Peterson, Anders Adolf; and Cummiskey, William J., to Hardinge Brothers, Inc. Stub collet. 3,961,800, Cl. 279-58.000.
Peterson, Joseph L.: *See—*
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Peterson, Laurence I.; and VanEyck, Michael J., to Dow Chemical Company, The. Preparation of alkylene diisocyanates. 3,962,301, Cl. 260-453.00P.
Peterson, Samuel F., Jr., to Associated Mills, Inc. Hydrotherapy bath assembly. 3,961,382, Cl. 4-178.000.
Petresh, Randall P.; and Toohey, Raymond F., to Ford Motor Company. Parking brake control. 3,961,545, Cl. 74-517.000.
Petro-Tex Chemical Corporation: *See—*
Woerner, Rudolph C., 3,962,127.
Petroff, Pierre Marc; and Rozgonyi, George Arthur, to Bell Telephone Laboratories, Incorporated. Reduction of dislocations in multilayer structures of zinc-blend materials. 3,962,716, Cl. 357-18.000.
Petrucelli, Frank, to Allied Chemical Corporation. Compositions of 3,3,3-trifluoro-2-trifluoromethyl propene/vinylidene fluoride copolymer and polytetrafluoroethylene. 3,962,373, Cl. 260-900.000.
Pfaff, Wayne K., to Plastronics, Inc. Mounting pad and semiconductor encapsulation device combination. 3,962,719, Cl. 357-74.000.
Pfister, Gustav R.; Williams, David J.; and Abkowitz, Martin A., to Xerox Corporation. Acid sensitized charge transfer complexes and cyclic electrostatographic imaging. 3,961,954, Cl. 96-1.600.
Pfizer Inc.: *See—*
Abu El-Haj, Marwan J.; and Dominy, Beryl William, 3,962,264.
Faubl, Hermann; and Belton, Annette M., 3,962,131.
Torres, Anibal, 3,962,472.
Phelps, Eric, to Foseco International Limited. Method of protecting refractory lining in containers for molten metal. 3,962,492, Cl. 427-204.000.
Phillips Petroleum Company: *See—*
Cobb, Raymond L., 3,962,134.
Drake, Charles A., 3,962,337.
Malick, Emil A., 3,962,042.
Moczygemba, George A.; and Hsieh, Henry L., 3,962,195.
Vanderveen, John W., 3,961,902.
Phillips, Ronald, to C.A.V. Limited. Actuator mechanism. 3,961,544, Cl. 74-513.000.
Phillips, Ronald L., to General Motors Corporation. Expansible sheet metal pulley with mannual detent adjustment means. 3,961,538, Cl. 74-230.800.
Photocircuits Division of Kollmorgan Corporation: *See—*
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Photocircuits Division of Kollmorgen: *See—*
Leech, Edward J., 3,962,496.
Pierlot, Bernard; and Potaufeu, Georges, to Clisalu. Cap which can be packaged without danger of wedging. 3,961,719, Cl. 215-277.000.
Pilkington Brothers Limited: *See—*
Alderson, John Victor; Stanley, Donald Frederick; and Rudd, John Duncan, 3,961,927.
Jago, John James; and Billington, Colin, 3,961,928.
Robinson, Albert Sidney; Loukes, David Gordon; and Lawrenson, Jack, 3,961,930.
Pillsbury Company, The: *See—*
Turpin, Charles H., 3,962,476.
Pines, Seemon H., to Merck & Co., Inc. Preparation of 7-acylamido-7-methoxy-3-substituted methyl-3(or 2)-cephem-4-carboxylic acid and its S-oxides. 3,962,231, Cl. 260-243.00C.
Pioch, Richard P.; and Schmiegel, Klaus K., to Eli Lilly and Company. 3-Phenacylpiperidines. 3,962,257, Cl. 260-293.800.
Pioneer Electronic Corporation: *See—*
Tsukagoshi, Tsunehiro, 3,961,797.
Pischke, LaMonte D.; and Shoaf, Myron D., to General Foods Corporation. Spray-dried L-aspartic acid derivatives. 3,962,468, Cl. 426-96.000.
Piston, Albert O.: *See—*
Criscimagna, Tony N.; and Piston, Albert O., 3,962,700.
Pittman, Carl R., to Arvin Hong Kong Ltd. Ambient light responsive illumination brightness control circuit. 3,962,600, Cl. 315-158.000.
Plana-GmbH: *See—*
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Plastronics, Inc.: *See—*
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Platz, Friedrich: *See—*
Bubik, Alfred; and Platz, Friedrich, 3,962,031.
Ploner, Klaus-Jurgen; Wild, Jost; and Sigg-Grutter, Trudi, to Givaudan Corporation. Process for making 1,3-diene hydrocarbons. 3,962,344, Cl. 260-601.00R.
Polaroid Corporation: *See—*
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Pollard, James H.: *See—*
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Pollio, Frank Xavier; and Campos, Omar, to Rohm and Haas Company. Refining of sugar containing liquids by ion exchange. 3,961,981, Cl. 127-46.00A.
Pollitzer, Ernest L.: *See—*
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Pont-A-Mousson S.A.: *See—*
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Langenfeld, Michel, 3,962,691.
Oger, Jacques Francois, 3,961,411.
Popka, Edward A., to United States of America, Army. Voltage doubler circuit. 3,962,591, Cl. 307-264.000.
Poplawski, Eugene M.: *See—*
Mankowski, Aleksander; Poplawski, Eugene M.; and Kraina, Jack H., 3,961,827.
Poponiak, Michael R.: *See—*
Abbas, Shakir A.; Dockerty, Robert C.; and Poponiak, Michael R., 3,962,052.
Popovitch, Dragolyoub, to United States of America, Army. Point-detonating projectile fuze. 3,961,578, Cl. 102-78.000.
Poppinger, Herbert, to Siemens Aktiengesellschaft. Circuit for determining a measure value of a rectified a-c voltage. 3,962,631, Cl. 324-119.000.
Porter, Gail E. Trig making tools. 3,961,387, Cl. 7-5.600.
Poslek, Stjepan; and Pericki, Vladimir. Detoxication device for exhaust gases of internal-combustion engines. 3,961,615, Cl. 123-119.0DB.
Post Office, The: *See—*
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Potaufeu, Georges: *See—*
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Potter, Gordon W., Jr., to Aladdin Industries, Incorporated. Vacuum insulated container. 3,961,720, Cl. 215-13.00R.
Powell, James E., to Shell Oil Company. Nitro(tetrahydro-2H-1,3-thiazin-2-ylidene)methyl aldehydes and ketones. 3,962,225, Cl. 260-243.00R.
Powelson, Douglas V. N.: *See—*
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Powers, Robert Lowell: *See—*
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Chang, Wen-Hsuan; and Hartman, Marvis E., 3,962,522.
Gillery, Frank H., 3,962,488.
Rowley, James R., 3,961,709.
Praetzel, Hans Eberhard; and Jenkner, Herbert, to Chemische Fabrik Kalk GmbH. Self-extinguishing acrylonitrile-butadiene-styrene moulding composition. 3,962,164, Cl. 260-28.50B.
Pratt Manufacturing Corporation: *See—*
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Blok, Glen R., 3,961,702.
Precision Engineering (Worcester) Limited: *See—*
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Precision Screen Machines Inc.: *See—*
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Priel, Ury; and Anselmo, Robert A., to National Semiconductor Corporation. Inverter with minimum skew. 3,962,589, Cl. 307-214.000.
Priester, Jack E. Apparatus and method for re-forming and maintaining the circular shape of a deformed roll of material. 3,961,516, Cl. 72-370.000.

Prinz, Richard: *See—*
Alberts, Heinrich; Bartl, Herbert; Prinz, Richard; Elghani, Salah Elabd; and Fischer, Winfried, 3,962,371.
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Loshbough, Richard C.; and Pryor, Edward G., 3,962,570.
Ptacek, James F.; and Shaneyfelt, Leon J., to Vendo Company, The. Electronic apparatus for testing moving coins employing successive time significant sensings of the effects of proximity of a coin under test to inductive impedance elements upon the effective impedances thereof. 3,962,627, Cl. 324-34.00R.
Puchalski, Chester: *See—*
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Pungs, Wolfgang: *See—*
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Purcell, Joseph: *See—*
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R. A. Jones & Company Inc.: *See—*
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R. Funk & Co., Inc.: *See—*
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Raccah, Paul M.; Halpern, Teodoro; and Shin, Soo Hee, to Yeshiva University. High-speed, high-current spike suppressor and method for fabricating same. 3,962,715, Cl. 357-2.000.
Rack, David, to Plana-GmbH. Plant holder and process for producing the same. 3,961,445, Cl. 47-37.000.
Rackley, Robert Lee, to Du Pont de Nemours, E. I., and Company. Process for curing heat-curable coating. 3,962,502, Cl. 427-444.000.
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Ramacher, Barry; and Pack, Marvin L., to Ramacher Manufacturing Company. Air separator apparatus. 3,962,072, Cl. 209-140.000.
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Rapp, James E., to Owens-Illinois, Inc. Glass-ceramics for semiconductor doping. 3,961,969, Cl. 106-39.600.
Rapp, James E., to Owens-Illinois, Inc. Barium aluminoborosilicate glass-ceramics for semiconductor doping. 3,962,000, Cl. 148-189.000.
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Raver, Louis J., to General Motors Corporation. Dual battery charging generator system. 3,962,621, Cl. 320-15.000.
Ray-Chaudhuri, Dilip K.; and Iovine, Carmine P., to National Starch and Chemical Corporation. Graft copolymers of a polyamideamine substrate and starch, and method of making same. 3,962,159, Cl. 260-17.4GC.
Ray, Jean-Louis; and Laugier, Robert, to Rhone-Progil. Cobalt-oxide-based catalytic substances for the oxidation of ammonia. 3,962,138, Cl. 252-462.000.
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Redman, Charles M.; and Moore, Ronald W., to United States of America, Army. Broadband data modulation system. 3,962,657, Cl. 332-7.510.
Reed, Donald K. Masonry anchor extractor tool. 3,961,410, Cl. 29-256.000.
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Rein, Charles R., to United States of America, Navy. Adjustable magnetic gradiometer. 3,962,628, Cl. 324-43.00G.
Reinert, Gerhard; Schaub, Andres; and Dussy, Paul, to Ciba-Geigy Corporation. Continuous process for optical brightening and printing of organic textile fiber material. 3,961,880, Cl. 8-17.000.
Reines, Jose; Platt, Eric G.; White, Stanley Earl; and Byckowski, Marion Casimir, to International Telephone and Telegraph Corporation. Switching network and peripheral circuits for telecommunications system. 3,962,552, Cl. 179-18.0EA.
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Renaud, Michel G. Mobile housing unit. 3,961,716, Cl. 214-85.000.
Renault, Philippe; Deschamps, Andre; and Dezael, Claude, to Institut Francais du Petrole, des Carburants et Lubrifiants. Process for purifying industrial gases containing hydrogen sulfide with sulfur production. 3,962,410, Cl. 423-574.00R.
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Rich, Beldon R.; Gallagher, Richard J.; and Berninger, John F., to Parker-Hannifin Corporation. Fluid motor and combination bumper and sealing ring therefor. 3,961,564, Cl. 92-85.00R.
Rich, Larry D., to Minnesota Mining and Manufacturing Company. Positive or negative developable photosensitive composition. 3,961,961, Cl. 96-83.000.
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Richardson, Peter C., to Celanese Corporation. Process for unsaturated aldehyde oxidation using a supported catalyst. 3,962,322, Cl. 260-530.00N.
Richman, Jay L., to Bendix Corporation, The. Biphase waveform generator using shift registers. 3,962,647, Cl. 328-59.000.
Richter, Ferdinand Joseph; and Riall, Charles Teets, to American Cyanamid Company. Using hydrophilic polyurethane laparotomy sponges. 3,961,629, Cl. 128-296.000.
Richter, Manfred; Schierbaum, Friedrich; Augustat, Siegfried; and Knoch, Klaus-Dieter, to Akademie der Wissenschaften der DDR. Method of producing starch hydrolysis products for use as a food additives. 3,962,465, Cl. 426-48.000.
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Riggs, John P., to Celanese Corporation. Acrylic fiber conversion utilizing a stabilization treatment conducted initially in an essentially inert atmosphere. 3,961,888, Cl. 8-115.500.
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Riitano, Francesco; and Spina, Vincenzo. Stop device for endodontic instruments. 3,961,422, Cl. 32-57.000.
Ringwall, Carl Gustave, to General Electric Company. Fluidic accelerometer. 3,961,536, Cl. 73-515.000.
Riou, Joannes; and Silvestri, Pierre, to Rusi Societe. Method of manufacturing a body for a valise, suitcase, attache case or similar article. 3,962,010, Cl. 156-93.000.
Rittler, Hermann L., to Corning Glass Works. Exuded transition metal spinel films on glass-ceramic articles. 3,962,514, Cl. 428-334.000.
Ritzerfeld, Gerhard. Copy sheet and method of printing the same. 3,962,489, Cl. 427-144.000.
Rivinius, Theodore. Hydraulic control system for hydraulically operated road grader. 3,961,670, Cl. 172-4.500.
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Roccaforte, Harry I.; and Lambert, Herbert L., to Hoerner Waldorf Corporation. Combined packer and display carton. 3,961,706, Cl. 206-44.00R.
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Rodabaugh, Rowena Ann. Printing apparatus for use on plastic containers. 3,961,575, Cl. 101-9.000.
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Roman, Steven A., to Shell Oil Company. Esters of nitro(tetrahydro-2H-1,3-thiazin-2-ylidene)acetic acids. 3,962,234, Cl. 260-243.00R.
Romanenko, Nikolai Trofimovich; Nikitin, Jury Filippovich; and Litenkova, Ljudmila Anatolievna. Arrangement for retaining an actuating member in an extreme position. 3,961,481, Cl. 60-531.000.
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Sakai, Katsumi; Onogawa, Yukio; Inamoto, Yoshitaka; Nakajima, Hiroshi; Fujimoto, Yasuo; Ohno, Kuniichiro; Yoshida, Masashi; and Araki, Shigehito, to Fuji Chemical Industry Co., Ltd.; and Nippon Chemiphar Co., Ltd. Alpha-cyanoamine compounds and a process for producing the same. 3,962,247, Cl. 260-268.0CN.
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Satake, Yasuro, to Suwa Electric Wire Co., Ltd. Ignition device for an internal combustion engine. 3,961,617, Cl. 123-148.00C.
Sato, Akihiro. Sonic responsive toy vehicle steering system. 3,961,441, Cl. 46-256.000.
Sato, Fumitaka: *See—*
Miyamoto, Akira; Nagano, Mitsuyasu; Sato, Fumitaka; and Morishige, Kiyoshi, 3,962,524.
Sato, Masamichi, to Fuji Photo Film Co., Ltd. Photomask material and method for producing same. 3,961,962, Cl. 96-87.00R.
Sato, Tadashi; Yamamoto, Yasunobu; Mizutani, Iwao; Yoshimi, Shigemitsu; and Teramoto, Tsutomu, to Aisin Chemical Company, Limited. Process for producing resin-coated sand particles for use in shell moles. 3,962,491, Cl. 427-195.000.
Sato, Takami: *See—*
Usamoto, Teruyoshi; Tsuji, Kozo; and Sato, Takami, 3,962,155.
Satomi, Takeo; and Hino, Naganori, to Sumitomo Chemical Company, Limited. Synergistic herbicidal composition comprising O-methyl or O-ethyl-O-(3-methyl-6-nitrophenyl)-N-secondary-butylphosphorothioamidate and a phenoxy-type herbicide. 3,961,935, Cl. 71-87.000.
Satzinger, Roland. Safety system for the occupants of vehicles, especially motor vehicles. 3,961,805, Cl. 280-747.000.
Sauer, Gerhard: *See—*
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Sauer, Winfriede: *See—*
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SCA Development Aktiebolag: *See—*
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Scardilli, Vincent; and Sussman, Arthur, to Bendix Corporation, The. Message tape for instrument display systems. 3,962,008, Cl. 156-73.400.
Scarpellino, Richard: *See—*
Parliment, Thomas H.; Clinton, William P.; Scarpellino, Richard; Soukup, Robert J.; and Epstein, Martin F., 3,962,321.
Schack, Colin B.; and Purdy, Clarence E., to Research Industries Corporation. Cervical sampling apparatus. 3,961,620, Cl. 128-2.00B.
Schaefer, Robert; and Hammell, Richard L., to Kroger Company, The. Soft food mix dispensing apparatus and method. 3,961,494, Cl. 62-73.000.
Schaeffer, Georg: *See—*
Semler, Gunther; Schaeffer, Georg; and Waldmann, Karl, 3,962,326.
Schaller, Robert: *See—*
Kramp, Ekkehard; Lenoir, John; Marthaler, Max; and Schaller, Robert, 3,961,957.
Schamblin, Charles H. M. Motion detection device including a pendulum switch. 3,962,693, Cl. 340-261.000.
Schanz, Johannes; and Burgdorf, Jochen, to ITT Industries, Inc. Disc brake. 3,961,690, Cl. 188-1.00A.
Scharnhorst, Kurt Peter; Bis, Richard F.; Dixon, Jack R.; Houston, Bland B., Jr.; Brown, Richard W.; and Riedl, Harold R., to United States of America, Navy. Vacuum deposition method for fabricating an epitaxial PbSnTe rectifying metal semiconductor contact photodetector. 3,961,998, Cl. 148-175.000.
Schaub, Andres: *See—*
Reinert, Gerhard; Schaub, Andres; and Dussy, Paul, 3,961,880.
Schell, Joseph G., Jr., to Dow Chemical Company, The. Process for recovering palladium. 3,961,943, Cl. 75-108.000.
Schellenberg, Matthias, to Ciba-Geigy AG. Process for fixing photographic material. 3,961,958, Cl. 96-61.00R.

Schering Aktiengesellschaft: *See—*
Ahrens, Hans; Biere, Helmut; Rufer, Clemens; Schroder, Eberhard; and Koch, Henning, 3,962,453.
Biere, Helmut; Ahrens, Hanns; Rufer, Clemens; Schroder, Eberhard; and Koch, Henning, 3,962,471.
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Raduchel, Bernd; Skuballa, Werner; Vorbruggen, Helmut; Elger, Walter; Losert, Wolfgang; and Loge, Olaf, 3,962,218.

Schiavone, Louise. Bicycle directional signal. 3,961,596, Cl. 116-53.000.

Schierbaum, Friedrich: *See—*
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Schiessl, Henry W.; and Kaufman, John D., to Olin Corporation. Method for accelerating oxygen removal employing an aqueous solution of an alkyl hydrazine. 3,962,113, Cl. 252-188.000.

Schinnerl, Victor A.: *See—*
Doria, Frank S.; and Schinnerl, Victor A., 3,962,091.

Schlee, Hans Georg; Sasse, Klaus; and Kuhle, Engelbert, to Bayer Aktiengesellschaft. Process for the production of N-haloformylcarbamic acid halide compounds. 3,962,327, Cl. 260-544.00C.

Schlumberger Instruments et Systemes: *See—*
Guyen-Phuoc, Boa-Dam N., 3,962,565.

Schmale, Fritz; and Theis, Hans. Alternate support for a drawing die made of hard metal or diamond. 3,961,515, Cl. 72-285.000.

Schmalfeld, Paul; Rammler, Roland; Peters, Werner; Ahland, Erwin; Bock, Burkhard; and Lehmann, Joachim, to Metallgesellschaft Aktiengesellschaft; and Bergwerksverband GmbH. Process for producing fine-grained coke by degasification of coal. 3,962,043, Cl. 201-21.000.

Schmank, Horst W., to Minnesota Mining and Manufacturing Company. Rigidly bonded green ceramics and processes. 3,962,162, Cl. 260-22.0CB.

Schmid, Walter, to Erich Kiefer, Lufttechnische Anlagen G.m.b.H. Perforated drum drier. 3,961,400, Cl. 26-80.000.

Schmidt-Dunker, Manfred, to Henkel & Cie G.m.b.H. Method of treatment of calcium disorders using aminoalkane-diophosphonic acids. 3,962,432, Cl. 424-204.000.

Schmidt-Dunker, Manfred: *See—*
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Schmitt, Frederick Louis: *See—*
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Schneider, Johannes; and Pungs, Wolfgang, to Dynamit Nobel Aktiengesellschaft. Injection molding of polyamides prepared from terephthalic acid mono- or di-methyl esters and 2,2,4-and/or 2,4,4-trimethylhexamethylenediamine. 3,962,400, Cl. 264-328.000.

Schneider, Josef, to Sandoz, Inc. Process for making 11-piperazinodiazepines, oxazepines, thiazepines and azepines. 3,962,248, Cl. 260-268.0TR.

Schneider, Rudolph R., Jr., to GTE Sylvania Incorporated. Means for restricting movement of a shadow mask in a direction transverse to the longitudinal axis of a color cathode ray tube. 3,962,598, Cl. 313-406.000.

Schoenaich, Guenther; Grabowsky, Otto; Mayer, Johann; and Matthias, Guenther, to BASF Aktiengesellschaft. Manufacture of granular isobutylidenediurea. 3,962,329, Cl. 260-553.00R.

Scholten, Joseph J. F.: *See—*
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Schon, Otmar, to Greer Hydraulics, Inc. Pressure accumulator. 3,961,646, Cl. 138-30.000.

Schorr, Steven M. Two-tier chromatic thumb piano. 3,961,553, Cl. 84-408.000.

Schrider, Michael Stanley, to American Cyanamid Company. Systemic control of ectoparasites with pyrethroids. 3,962,458, Cl. 424-304.000.

Schrimsher, Albert Eugene, to Hobart Corporation. Door latch for a pressure vessel. 3,961,817, Cl. 292-336.300.

Schroder, Eberhard: *See—*
Ahrens, Hans; Biere, Helmut; Rufer, Clemens; Schroder, Eberhard; and Koch, Henning, 3,962,453.
Biere, Helmut; Ahrens, Hanns; Rufer, Clemens; Schroder, Eberhard; and Koch, Henning, 3,962,471.

Schroder, Johann, to U.S. Philips Corporation. Process of preventing corrosion of a metal walled system containing molten fluoride. 3,962,407, Cl. 423-464.000.

Schropp, Wilhelm Karl, to BASF Aktiengesellschaft. Process for separating acrylic acid from aqueous solutions. 3,962,074, Cl. 210-21.000.

Schubert, Bernhard; and Blidung, Otto, to Hauni-Werke Korber & co., KG. Method and machine for the production of composite filter mouthpieces. 3,961,633, Cl. 131-94.000.

Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See—*
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Schultz, Peter C.: *See—*
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Schulz, Max Erich, to Gervais-Danone AG. Preparation of melt-resistant process cheese. 3,962,483, Cl. 426-582.000.

Schulz-Methke, Hans-Dieter, to Espera-Werke GmbH. Device for the incremental scanning of a line scale. 3,962,563, Cl. 235-92.00V.

Schulze, Norman D.: *See—*
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Schumacher, Frederick George, to Du Pont de Nemours, E. I., and Company. Process for laminating pressure-sensitive material. 3,962,012, Cl. 156-164.000.

Schwartz, Boris. Method of cutting and removing sutures. 3,961,419, Cl. 128-303.00R.

Schwarz, Wolfgang: *See—*
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Scoville, Frank J. Chlorine gas or hypochlorite producing apparatus. 3,962,065, Cl. 204-256.000.

Scriven, Roger L.: *See—*
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Sealol, Inc.: *See—*
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Sears, Charles Kenneth, to International Electric Co. Irrigation system controller. 3,961,753, Cl. 239-64.000.

Sears, Raymond M.: *See—*
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Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Frequency sample-and-hold circuit. 3,962,541, Cl. 178-69.50R.

Seidel, Michael C.; and Crook, Evan H., to Rohm and Haas Company. Dissolution of gallstones. 3,962,420, Cl. 424-81.000.

Seiko Koki Kabushiki Kaisha: *See—*
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Seipp, Heinrich: *See—*
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Sekiya, Fukuo: *See—*
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Selin, Terry G.: *See—*
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Sellstedt, John H., to American Home Products Corporation. Intermediates for preparing semi-synthetic penicillins and processes relating thereto. 3,962,215, Cl. 260-239.100.

Selway, Peter Richard; Leggett, Norman Derek; and Eales, Brian Arthur, to International Standard Electric Corporation. Semiconductor laser stack. 3,962,655, Cl. 331-94.50H.

Semler, Gunther; Schaeffer, Georg; and Waldmann, Karl, to Hoechst Aktiengesellschaft. Process for the manufacture of carboxylic acid chlorides. 3,962,326, Cl. 260-544.00K.

Setzer, Herbert J.; and Standley, Warren R., to United Technologies Corporation. Method for catalytically cracking a hydrocarbon fuel. 3,962,411, Cl. 423-651.000.

Sevak, Nitin M.; and Su, Chauchang, to Burroughs Corporation. Document transport apparatus having a vacuum assisted friction feeder. 3,961,784, Cl. 271-94.000.

Sexton, Michael David: *See—*
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Shaheen, Charles William. Composition and process for removing sulfur dioxide from combustion gases. 3,962,112, Cl. 252-187.00R.

Shainberg, Maurice; and Purcell, Joseph. Paper scoring and slitting machine. 3,961,547, Cl. 83-11.000.

Shaneyfelt, Leon J.: *See—*
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Shankel, John; and Shankel, Marilou, to Lawrence Peska Associates, Inc., a part interest. Apertured paddle and resilient projectile. 3,961,792, Cl. 273-95.00R.

Shankel, Marilou: *See—*
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Shanks, Donald E.; and Haver, Frank P., to United States of America, Interior. Recovery of zinc from zinc chloride by fused salt electrolysis. 3,962,050, Cl. 204-66.000.

Shapiro, Milton R.: *See—*
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Shapiro, Zalman M., to Atlantic Richfield Company. Uniformly porous body. 3,961,909, Cl. 29-192.0CP.

Shavel, John, Jr.: *See—*
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Shepherd, Warren Arnold, Jr.; and Guanaccia, Joseph James, to Stanley Works, The. Method of forming a handle connection for impact tools. 3,962,399, Cl. 264-261.000.

Sheppard, Chester Stephen: *See—*
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Sherwood, Theodore R., to Lockheed Missiles & Space Company, Inc. Machine for unloading micro-electronic beam lead chips. 3,961,409, Cl. 29-235.000.

Shiba, Keisuke; Hirose, Takeshi; Hayashi, Jun; Arai, Atsuaki; Furutachi, Nobuo; and Katsuyama, Harumi, to Fuji Photo Film Co., Ltd. Multilayer color photographic materials. 3,961,960, Cl. 96-74.000.

Shiba, Keisuke; Hirose, Takeshi; and Aono, Toshiaki, to Fuji Photo Film Co., Ltd. Multilayer photographic material. 3,961,963, Cl. 96-100.000.

Shiba, Motoharu: *See—*
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Shishoo, Roshan Lal; and Lundell, Erik Malte, to Svenska Textilforskningsinstitutet. Pretreatment, packing, storing and finishing treatment of textile material products. 3,961,458, Cl. 53-21.0FC.

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Showell, Richard Grahame Dugard; and Spears, Peter John, to Bar Productions (Bromsgrove) Limited. Storage assemblies. 3,961,831, Cl. 312-200.000.

Shuichi, Ishida: *See—*
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Sidi, Henri; and Johnson, Hilding R., to Tenneco Chemicals, Inc. Monocyclic polyoxymethyleneoxazolidines and biocidal compositions containing same. 3,962,271, Cl. 260-307.0FA.

Sidles, James, to B. F. Goodrich Company, The. Mud resistance elastomer. 3,961,428, Cl. 36-32.00R.

Siegel, Helmut. Prefabricated window unit. 3,961,659, Cl. 160-26.000.

Siegel, Vernon Harold. Portable housing for weighing systems. 3,961,675, Cl. 211-.

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Signetics Corporation: *See—*
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Sih, Charles J., to Wisconsin Alumni Research Foundation. 3-Substituted iodo alkenyl compounds and methods for preparing same. 3,962,351, Cl. 260-633.000.

Sih, Charles J., to Wisconsin Alumni Research Foundation. 3-Substituted iodo alkenyl compounds and methods for preparing same. 3,962,352, Cl. 260-633.000.

Sih, Charles J., to Wisconsin Alumni Research Foundation. 3-Substituted iodo alkenyl compounds and methods for preparing same. 3,962,353, Cl. 260-633.000.

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Skaife, William, to Springtime Flowers, Inc. Flower pot container for plant seeds in a dormant growing medium and method of preparing for storage and shipment and then using same. 3,961,444, Cl. 47-34.110.

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Slathar, Donald A.; and Neutkens, Christiaan H., to International Telephone and Telegraph Corporation. Apparatus for wrapping confectionery products and the like. 3,961,462, Cl. 53-221.000.

Small, James R.; and Meckstroth, Robert C., to Hobart Corporation. Commodity identification apparatus. 3,961,747, Cl. 235-61.90R.

Smith, Ashtyn Hereward; and Forbat, John Egon, to Inertia Switch Limited. Protective systems. 3,962,696, Cl. 340-276.000.

Smith, Billy R.; and Smith, Francis Moses, to B&M Die Co., Inc. Compound angle cutting edge. 3,961,858, Cl. 408-204.000.

Smith, Charles, to Dow Corning Limited. Process for treating fibers. 3,962,500, Cl. 427-387.000.

Smith, Dennis J.: *See—*
Turner, Timothy D.; and Smith, Dennis J., 3,961,847.

Smith, Francis Moses: *See—*
Smith, Billy R.; and Smith, Francis Moses, 3,961,858.

Smith, Franklin A., to Houdaille Industries, Inc. Die changing turret table segment. 3,961,549, Cl. 83-552.000.

Smith, Harry: *See—*
Buckle, Derek Richard; Cantello, Barrie Christian Charles; and Smith, Harry, 3,962,445.

Smith, John Lynn: *See—*
Ehrsam, William Friedrich; Meyer, Carl H. W.; Powers, Robert Lowell; Smith, John Lynn; and Tuchman, Walter Leonard, 3,962,539.

Smith, Robert, to Lawrence Peska Associates, Inc., a part interest. Device for viewing three dimensional pictures. 3,961,427, Cl. 35-29.00A.

Smith, Robert L., to Electronic Memories and Magnetics Corporation. Start-up control for DC motors. 3,962,616, Cl. 318-400.000.

Smith, William W., to FMC Corporation. Olive stuffing method. 3,962,474, Cl. 426-282.000.

SmithKline Corporation: *See—*
Baile, Clifton A.; Bender, Paul E.; and Loev, Bernard, 3,962,448.
Berkoff, Charles E.; Sutton, Blaine M.; and Weinstock, Joseph, 3,962,438.
Bowie, Betty Anne; and Pagano, Joseph F., 3,961,696.

SmithKline & French Laboratories, Inc.: *See—*
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Smolka, Heinz: *See—*
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Neri, Carlo; and Perrotti, Emilio, 3,962,250.
Pagani, Giorgio, 3,961,658.

Snell, Brian Kenneth; and Ghosh, Ranajit, to Imperial Chemical Industries Limited. Fungicidal compositions containing 2-amino pyrimidines and methods of using the same. 3,962,442, Cl. 424-251.000.

Societa' Italiana Resine S.I.R. S.p.A.: *See—*
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Societe Chimique des Charbonnages: *See—*
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Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
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Societe des Automobiles Peugeot: *See—*
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Societe d'Etudes de Machines Thermiques: *See—*
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Societe Dite: Electronique Marcel Dassault: *See—*
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Societe Industrielle pour la Construction de Materiels Automatiques S.I.C.M.A.: *See—*
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Societe Kessler S.A.: *See—*
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Soland, John Paul: *See—*
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Solarsystems Incorporated: *See—*
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Somers, Stanley Brice Lascelles. Device for guiding a magnetic tape in a recording cassette. 3,961,763, Cl. 242-199.000.

Sonnberg, Joachim; and Sanden, Ulrich, to Diessel GmbH & Co. System for measuring the flow and recording quantities of liquid. 3,961,527, Cl. 73-194.00R.

Sonneborn, Kurt Jacques, to RCA Corporation. Pattern definition in an organic layer. 3,962,004, Cl. 156-11.000.

Sony Corporation: *See—*
Kamimura, Tomohisa; and Suzuki, Makoto, 3,962,727.
Kitamura, Nobuo; and Mogi, Takao, 3,962,642.
Makino, Yoshimi; and Ito, Shigeyasu, 3,961,946.
Suwa, Hisashi, 3,962,641.
Suzuki, Tadao; Kawada, Hirohito; and Sugimoto, Yasuo, 3,961,666.

Sorensen, Robert; and Zablocki, Richard A., to International Harvester Company. Cutterbar control system. 3,961,464, Cl. 56-10.400.

Soukup, Robert J.: *See—*
Parliment, Thomas H.; Clinton, William P.; Scarpellino, Richard; Soukup, Robert J.; and Epstein, Martin F., 3,962,321.

Soupe, Ralph R.: *See—*
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Sozzi, Tomaso, to Societe d'Assistance Technique pour Produits Nestle S.A. Process for preparing a butter-like dairy product. 3,962,464, Cl. 426-43.000.

Spangler, Eugene A. Adjustable sun shield. 3,961,820, Cl. 296-97.00C.

Spangler, Searle T. Multiple mode variable speed motor control circuit. 3,962,615, Cl. 318-305.000.

Sparlin, Derry D.; and Starks, Charles M., to Continental Oil Company. High strength silicate form and method for producing same. 3,961,972, Cl. 106-75.000.

Sparrendahl, Gunnar Erik William, to Telefonaktiebolaget L M Ericsson. Device for converting an incoming analog signal into an outgoing PCM signal. 3,962,636, Cl. 325-38.00B.

Sparrow, Edward J.: *See—*
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Spaulding, Vernon E. Conversion bracket for well pump. 3,961,865, Cl. 417-362.000.

Spears, Cecil Julius. Collapsible tube squeezing device. 3,961,727, Cl. 222-103.000.

Spears, Peter John: *See—*
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Spector, Richard: *See—*
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Sperrle, Kurt, to Werner & Pfleiderer. Mixing and kneading device. 3,961,776, Cl. 259-192.000.

Sperry Rand Corporation: *See—*
Nichols, Kenneth E., 3,961,866.

Sphero International Company: *See—*
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Spina, Vincenzo: *See—*
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Spitschan, Hans-Jorg: *See—*
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Spitz, Melvin P. Bed frame having releasably interlocked side rails and crossbars. 3,961,383, Cl. 5-181.000.

Spitz, Melvin P. Bed frame having releasably interlocked side rails and crossbars. 3,961,384, Cl. 5-184.000.

Spitzer, Wayne A.: *See—*
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Spivack, John D.; and Dexter, Martin, to Ciba-Geigy Corporation. 2,4,-6-Trialkyl-3-hydroxyphenylalkane phosphonates and phosphinates. 3,962,376, Cl. 260-953.000.

Spivack, John D., to Ciba-Geigy Corporation. 2,3,5-Trialkyl-4-hydroxybenzylphosphonates and phosphinates. 3,962,377, Cl. 260-953.000.

Spivak, Boris Volkovich: *See—*
Konovalov, Boris Leonidovich; Glider, Evgeny Khaimovich; Gradov, Oleg Borisovich; Karpman, David Bentsionovich; Spivak, Boris Volkovich; Chigirinsky, Alexandr Abramovich; Kildishev, Vasily Semenovich; Linetsky, Genrikh Nukhimovich, deceased; and Linetskaya, Ella Semenovna, administrator, 3,962,594.

Sprague Electric Company: *See—*
Gilbert, Curtiss M.; Bemis, Richard A.; and Schulze, Norman D., 3,962,048.

Sprague, George R., to Colonial Rubber Works, Inc. Apparatus for making carpet underlay. 3,961,875, Cl. 425-224.000.

Sprague, Robert H., to Itek Corporation. Merocyanine photoconductors. 3,961,952, Cl. 96-1.500.

Sprecher, Raymond G., to General Motors Corporation. Vehicular trunk lid latch assembly. 3,961,504, Cl. 70-1.500.

Sprecher & Schuh AG: *See—*
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Springtime Flowers, Inc.: *See—*
Skaife, William, 3,961,444.

Square D Company: *See—*
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Srivastava, Gopal Krishna, to GTE Sylvania Incorporated. Automatic peak color control circuit. 3,962,723, Cl. 358-27.000.

Stach, Leonard J., to Velsicol Chemical Corporation. 3-Oxocyclohex-1-enyl 2-methoxy-3,6-dichlorobenzoate, and herbicidal use thereof. 3,961,939, Cl. 71-107.000.

Stackman, Robert W., to Celanese Corporation. Organopolysiloxane polyesters. 3,962,299, Cl. 260-448.80R.

Staeubli, Ltd.: *See—*
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Stahl-Urban Company: *See—*
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Stahle, Eugen: *See—*
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Stahly, H. La Mar, to Elkhart Products Corporation. Method of making pipe fittings. 3,961,513, Cl. 72-58.000.

Staley, Lewis E., to Rockwell International Corporation. Digital function generator. 3,962,573, Cl. 235-156.000.

Stamicarbon B.V.: *See—*
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Standard Oil Company: *See—*
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Stanley, Donald Frederick: *See—*
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Stanley Works, The: *See—*
Shepherd, Warren Arnold, Jr.; and Guanaccia, Joseph James, 3,962,399.

Stark, Olof; and Martensson, Kjell, to AB Ziristor. Parallelepipedal packing container. 3,961,742, Cl. 229-17.00R.

Stark, William Max, to Eli Lilly and Company. Antibiotic nebramycin factor VII. 3,962,427, Cl. 424-118.000.

Starkey, Isaac R. Easy-up tree stand. 3,961,686, Cl. 182-187.000.

Starks, Charles M.: *See—*
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State of Florida, The Board of Regents of the: *See—*
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Steckelberg, Willi: *See—*
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Steel Company of Canada, Limited, The: *See—*
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Steele, Roger B.; Katzakian, Arthur, Jr.; Scigliano, Joseph J.; and Hamel, Edward E., to Aerojet-General Corporation. Imide oxirane reactions. 3,962,182, Cl. 260-47.0EN.

Steer Safe, Inc.: *See—*
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Steffen, Jurg: *See—*
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Steger, Werner Thomas, to Tridon Limited. Connecting clip. 3,961,394, Cl. 15-250.320.

Stehl, Otto, to Flachglas Aktiengesellschaft Delog-Detag. Apparatus for laminating insulating window panes or the like. 3,962,024, Cl. 156-539.000.

Steinberg, David H.: *See—*
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Steinwagner, Gerhard: *See—*
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Stepanek, Bohumil; and Bandoch, Rudolf, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Mechanism for supporting needle cams on knitting machines. 3,961,499, Cl. 66-54.000.

Stepner, David E.: *See—*
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Sterling Engineering and Manufacturing Company: *See—*
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Stern, Howard K.: *See—*
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Stevens, Robert C.: *See—*
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Stewart, David A., to General Electric Company. Tone frequency detecting circuit. 3,962,645, Cl. 325-478.000.

Stiffel, Henry R.: *See—*
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Stine, Joe C., to Houston Systems, Inc. Single line davit. 3,961,713, Cl. 212-58.00R.

Stockdale, George Fairbank, to RCA Corporation. Method for embossing a pattern in glass. 3,961,929, Cl. 65-35.000.

Stoeckler, Hans A.: *See—*
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Stolzy, Albert Donald, to International Telephone and Telegraph Corporation. Rate divider. 3,962,572, Cl. 235-156.000.

Stone, Wayne B., Jr. Direct readout exhibitor for determining long distance telephone charges. 3,962,548, Cl. 179-7.10R.

Stotler, Harold H., to Hydrocarbon Research, Inc. H-coal process: slurry oil recycle system. 3,962,070, Cl. 208-10.000.

Stridde, George E., to NL Industries, Inc. Process for alkylating aromatic hydrocarbons. 3,962,361, Cl. 260-671.00C.

Strohbeck, Gotthilf; and Stahle, Eugen, to Robert Bosch GmbH. Vibratory compactor. 3,961,774, Cl. 259-1.00R.

Strong, Clifford H. G.: *See—*
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Struebing, James: *See—*
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Stucker, James E. Confection holding device. 3,962,470, Cl. 426-135.000.

Studebaker, Gary W.; and Studebaker, Susan H. All directions balance board to enhance motor development of the cerebral palsied child. 3,961,787, Cl. 272-93.000.

Studebaker, Susan H.: *See—*
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Stumpf, Hans-Rainer: *See—*
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Stumpfi, Werner: *See—*
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Sublistatic Holding SA: *See—*
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Subsea Equipment Associates Limited: *See—*
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Suciu, George, to Newmapak Ltd. Clamping conveyor. 3,961,705, Cl. 198-248.000.

Suggitt, Robert M., to Texaco Development Corporation. Method for preparing polyphenyls. 3,962,362, Cl. 260-668.00R.

Sugimoto, Yasuo: *See—*
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Sugio, Akitoshi: *See—*
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Sullivan, Edward A., to Ventron Corporation. Bleaching wood pulp with sodium hydrosulfite in the presence of hexamethylenetetramine. 3,962,030, Cl. 162-72.000.

Sumitomo Bakelite Company, Limited: *See—*
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Sumitomo Chemical Company, Limited: *See—*
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Sumitomo, Megumu: *See—*
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Sumner, Harry Hall; and Williams, Gerald, to Imperial Chemical Industries Limited. Coloration process. 3,961,881, Cl. 8-17.000.

Sun Oil Company of Pennsylvania: *See—*
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Superior Continental Corporation: *See—*
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Supp, Emil: *See—*
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Susumu, Takeuchi: *See—*
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Suzuki, Fukushi: *See—*
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Suzuki, Narishige; Morino, Yoshihiro; Hashiguchi, Yoshitaka; and Segawa, Tunehiro, to Shofu Dental Corporation; and Teikoku Chemical Industry Co., Ltd. Dental cement composition. 3,962,267, Cl. 260-29.6TA.

Suzuki, Tadao; Kawada, Hirohito; and Sugimoto, Yasuo, to Sony Corporation. Heat dispersion device for use in an electronic apparatus. 3,961,666, Cl. 165-129.000.
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Swanson, S. Keith; and Stepner, David E., to Measurex Corporation. Temperature control system for textile tenter frame apparatus. 3,961,425, Cl. 34-25.000.
Sweeney, William T., to Continental Oil Company. Control system for positioning extensible pipeline system. 3,961,772, Cl. 254-173.00R.
Sweet, David L.: *See—*
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Sweet, Phillip J.; Hamlet, Buck C.; and Sweet, David L., to American Carrier Equipment, Inc. Suspension unit. 3,961,826, Cl. 301-125.000.
Swered, Paul; and Shema, Bernard F., to Betz Laboratories, Inc. Slime control compositions and their use. 3,962,456, Cl. 424-298.000.
Swietlik Joseph Marian; and Sexton, Michael David, to Exxon Research and Engineering Company. Lubricating oil compositions. 3,962,104, Cl. 252-32.70E.
Swift, Thomas Edwin, to Eltra Corporation. Small engine ignition system with spark advance. 3,961,618, Cl. 123-148.0CC.
Swinnen, Maurice E. T.: *See—*
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Sze, Morgan C., to Lummus Company, The. Gravity settling. 3,962,098, Cl. 210-532.00R.
Szuhaj, Bernard F.; and Yaste, Joseph R., to Central Soya Company, Inc. Phosphatide preparation process. 3,962,292, Cl. 260-403.000.
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Tabacheck, Martin S. Net tightener. 3,961,789, Cl. 273-29.0BE.
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Takasago Perfumery Co., Ltd.: *See—*
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Tempka, John A., to Motorola, Inc. Squelch circuit for a digital system. 3,962,646, Cl. 325-478.000.
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Thomas, O. Leon, to Southwire Company. Trailer hitch. 3,961,813, Cl. 280-485.000.

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Thommen, Werner; and Korom, Arpad, to U.S. Philips Corporation. Current source circuit arrangement. 3,962,592, Cl. 307-297.000.

Thompson, Charles E., to Continental Oil Company. Waterproof paperboard and method for producing same. 3,962,509, Cl. 428-182.000.

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Throckmorton, Morford C.; Donbar, Ken W.; and Kauffman, Karl C., to Goodyear Tire & Rubber Company, The. Polymerization process. 3,962,375, Cl. 526-335.000.

Thurston, Kelly W., to General Motors Corporation. Exhaust gas recirculation control system. 3,961,610, Cl. 123-119.00A.

Tiberg, Magnus Gustav Georg; and Uggla, Jan B:Son, to Allmanna Svenska Elektriska Aktiebolaget. Apparatus and method for refining a metal melt. 3,961,779, Cl. 266-225.000.

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Tornqvist, Erik G. M.; and Cozewith, Charles, to Exxon Research and Engineering Company. Butadiene polymerization catalyst. 3,962,130, Cl. 252-429.00B.

Torres, Anibal, to Pfizer Inc. Method of inhibition of warmed-over flavor in uncured meats. 3,962,472, Cl. 426-281.000.

Torressen, Albert F., to Lawrence Peska Associates, Inc., a part interest. Space saver dishwasher. 3,961,984, Cl. 134-100.000.

Totani, Kazuo: *See—*
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Touro, Freddie J., to Freeport Minerals Company. Oxidation-leaching of chalcopyrite. 3,962,402, Cl. 423-35.000.

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Toy, Arthur D. F.; and Uhing, Eugene H., to Stauffer Chemical Company. Process for preparing alkyl- or aryl-phosphonothioic dihalides. 3,962,323, Cl. 260-543.00P.

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Trapasso, Louis E., to Celanese Corporation. Bis-quaternary ammonium compounds and polymers. 3,962,332, Cl. 260-561.00N.

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Tridon Limited: *See—*
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Tsuchida, Takayasu; Yoshinaga, Fumihiro; and Okumura, Shinji, to Ajinomoto Co., Inc. Method for producing S-adenosylmethionine or methylthioadenosine by yeast. 3,962,034, Cl. 195-28.00N.

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Tucker, Robert Jerome; and Spector, Richard, to American Cyanamid Company. Dialkylsulfonamide dyes. 3,962,245, Cl. 260-256.50R.

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Turner, Timothy D., to Xerox Corporation. Electrophotographic printing machine with halftone screen cleaning. 3,961,848, Cl. 355-4.000.
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Ueki, Shigeru, to Kabushiki Kaisha Aiden. Process for coloring aluminum anodic oxide film. 3,962,049, Cl. 204-35.00N.
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Vandenberg, Ben W.; Vandenberg, August; and Vandenberg, Andrew W. Radial arm milk hose support. 3,962,575, Cl. 248-340.000.

Van Der Meulen, Douglas J.: *See—*
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Vanderveen, John W., to Phillips Petroleum Company. Carbon black reactor. 3,961,902, Cl. 23-259.500.

Van der Vegt, Johannus Gerhardus Jozef, to U.S. Philips Corporation. Circuit arrangement in television display apparatus for correcting the horizontal linearity. 3,962,603, Cl. 315-370.000.

Van Eek, Wouter Hugo; Boers, Henri Marie; Grupping, Arnold Willem J.; Van Wamelen, Pieter Jacobus J.; and Rehm, Willem Christian. Method and system for winning minerals. 3,961,824, Cl. 299-17.000.

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VanEyck, Michael J.: *See—*
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van Gils, Gerard E., to General Tire & Rubber Company, The. Composite of polyamine bonded to rubber and method for making the same. 3,962,011, Cl. 156-110.00A.

Vannatter, Harley E. Ski binding. 3,961,802, Cl. 280-631.000.

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Veneklasen, Paul S. Choralizer apparatus and method. 3,962,542, Cl. 179-1.00J.

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Veugelers, Hubertus Leonardus Martinus, to Conval Nederland N.V. Plunger valves. 3,961,768, Cl. 251-191.000.

Viges S.p.A.: *See—*
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Villers, Roger L.: *See—*
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Vinci, J. Fredrick, to Winnebago Industries, Inc. Door operating apparatus. 3,961,660, Cl. 160-188.000.

Viola, Leonard J., to Richardson-Merrell Inc. Foam producing cleansing compositions. 3,962,150, Cl. 252-542.000.

Visser, Wim, to U.S. Philips Corporation. Inductive position determining device. 3,962,663, Cl. 336-129.000.

Vits, Helmuth; and Baker, Preston G., Jr., to Bigelow-Sanford, Inc. Sculptured printing of nylon carpet. 3,961,882, Cl. 8-17.000.

Vlemmings, Jan, to Robert Bosch G.m.b.H. Gear pump or motor with radial balancing. 3,961,870, Cl. 418-73.000.

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von der Eltz, Hans-Ulrich: *See—*
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von Dohlen, Henry Claus; and Burt, Wallace Allison, to Allied Chemical Corporation. Returnable bottle packing case. 3,961,708, Cl. 206-435.000.

von Halasz, Sigmar-Peter, to Hoechst Aktiengesellschaft. Process for preparing perfluorononanes. 3,962,358, Cl. 260-653.000.

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Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi: *See—*
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Ward, John David, to Precision Engineering (Worcester) Limited. Split moulds and carriers therefor. 3,961,664, Cl. 164-343.000.

Ward, Rodney L., to Ferro Corporation. Preparation of nickel and chromium substrates for ceramic coating. 3,962,490, Cl. 427-193.000.

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Waterous Company: *See—*
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Wattiez, Daniel; Chatelin, Roger; and Fabre, Paul, to Agence National de Valorisation de la Recherche (ANVAR). Process for the treatment of cellulosic textile materials. 3,962,054, Cl. 204-159.120.

Watts, Robert L.; and Juniper, Michael D., to United States of America, Navy. Tethered vehicle location system. 3,962,672, Cl. 340-6.00R.

Waukesha Foundry Company, Inc.: *See*—
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Weimer, Dean R.; and Durr, Albert M., to Continental Oil Company. Technique for reducing polymer deposit during polymerization in aqueous dispersion. 3,962,196, Cl. 526-74.000.

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Welsch, John H.; and Sparrow, Edward J., to Sterling Engineering and Manufacturing Company. Impact hammer post driver. 3,961,672, Cl. 173-43.000.

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Westerberg, Erik Gerhard Natanael. Optical mass data memory. 3,962,688, Cl. 340-173.0LM.

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Witzel, Frank, to Life Savers, Inc. Chewing gum having surface impregnated, microencapsulated flavor particles. 3,962,463, Cl. 426-5.000.

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Wokock, Ortwin; and Kaiser, Bernhard, to Kienzle Apparate GmbH. Manually activated apparatus for timing intervals of different magnitude. 3,961,695, Cl. 194-83.000.

Wolf, Sidney K.; and Cavanaugh, Robert M. Bread including nutritional amounts of magnesium. 3,962,480, Cl. 426-549.000.

Wolfangel, Robert G., to Mallinckrodt Chemical Works. Metal hydroxide microspheroidal scintigraphic agents and method of preparation. 3,962,412, Cl. 424-1.000.

Wolfe, John W. Metal drawing mixture. 3,961,511, Cl. 72-42.000.

Wolske, Eugene H., to Bemis Company, Inc. Method of and apparatus for wrapping a load in a wrapper of stretchable material. 3,961,459, Cl. 53-24.000.

Wolters, Jakob; and Classen, Josef, to Maschinen- und Bohrgerate-Fabrik Alfred Wirth & Co., K.G. Drilling apparatus. 3,961,673, Cl. 175-52.000.

Wolz, Francis T., to Folger Adam Co. Prison door locking mechanism. 3,961,447, Cl. 49-362.000.

Wong, Backman, to Standard-Thomson Corporation. Thermally responsive fluid control valve. 3,961,606, Cl. 123-41.120.

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Yamamoto, Hisao: *See—*
Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamamoto, Hisao, 3,962,446.

Yamamoto, Yasunobu: *See—*
Sato, Tadashi; Yamamoto, Yasunobu; Mizutani, Iwao; Yoshimi, Shigemitsu; and Teramoto, Tsutomu, 3,962,491.

Yamanouchi, Koichi: *See—*
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Yamaoka, Shigenori: *See—*
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Yamazaki, Tatsuo; and Hayashida, Takemi, to Kanro Co. Ltd. Method of producing dehydrated fried snack food from apples. 3,962,355, Cl. 426-639.000.

Yanagida, Kiyomi; Hirokane, Tadashi; Sumitomo, Megumu; and Takaoka, Hidenori, to Sumitomo Chemical Company, Limited. Aluminum-base alloys for cable-sheath. 3,961,944, Cl. 75-138.000.

Yanker, George Michael, to International Business Machines Corporation. Self clearing roller feed assembly for document feed apparatus. 3,961,786, Cl. 271-122.000.

Yarwood, John C.; Dore, James E.; and Preuss, Robert K., to Swiss Aluminium Ltd. Ceramic foam filter. 3,962,081, Cl. 210-69.000.

Yashica Co., Ltd.: *See—*
Muramatsu, Sadao, 3,962,708.

Yaste, Joseph R.: *See—*
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Yissum Research Development Company: *See—*
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Yocum, Richard A. Record tool. 3,961,819, Cl. 294-27.00R.

Yokota, Hideo: *See—*
Okuno, Youichi; and Yokota, Hideo, 3,962,710.

Yokoyama, Kazumasa; Yamanouchi, Koichi; Murashima, Ryoichiro; and Watanabe, Ryozo, to Green Cross Corporation, The. Oxygen-transferable emulsion. 3,962,439, Cl. 424-248.000.

Yonekawa, Hisashi; and Azuma, Tosio, to Bridgestone Tire Company Limited. Tire bead flipping apparatus. 3,962,020, Cl. 156-460.000.

Yonemitsu, Eiichi; Sugio, Akitoshi; and Konishi, Akihiko, to Mitsubishi Gas Chemical Company, Inc. Process for polymerizing phenols to produce polyphenylene oxides of low molecular weight. 3,962,180, Cl. 260-47.0ET.

Yoshida, Masashi: *See—*
Sakai, Katsumi; Onogawa, Yukio; Inamoto, Yoshitaka; Nakajima, Hiroshi; Fujimoto, Yasuo; Ohno, Kunichiro; Yoshida, Masashi; and Araki, Shigehito, 3,962,247.

Yoshida, Yuichi; and Takagi, Akio, to Nippon Paint Co., Ltd. Method for chemical treatment of the surface of an iron substrate with phosphoric acid solutions. 3,961,991, Cl. 148-6.15R.

Yoshikawa, Susumu: *See—*
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Yoshimi, Shigemitsu: *See—*
Sato, Tadashi; Yamamoto, Yasunobu; Mizutani, Iwao; Yoshimi, Shigemitsu; and Teramoto, Tsutomu, 3,962,491.

Yoshimura, Kiyotaka; Asano, Shiro; and Honda, Tadatoshi, to Mitsui Toatsu Chemicals, Incorporated. Process for the production of acrylamide and methacrylamide. 3,962,333, Cl. 260-561.00N.

Yoshinaga, Fumihiro: *See—*
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Yoshino Kogyosho Co., Ltd.: *See—*
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Yoshiyuki, Kazuhiko: *See—*
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Young, Charles C., to Fleeman, Kenneth. Cleaning device for shower enclosure tracks. 3,961,392, Cl. 15-105.000.

Young, Frank Edward: *See—*
Reddaway, Anthony Lewis; and Young, Frank Edward, 3,961,491.

Young, Lewis Brewster, to Mobil Oil Corporation. Alkylation in presence of phosphorus-modified crystalline luminosilicate catalyst. 3,962,364, Cl. 260-671.00C.

Yugenkaisha Sankyo Furnace: *See—*
Ozawa, Takahisa, 3,961,587.

Yukio, Aoki; Susumu, Takeuchi; Shizuo, Wakita; Shoichi, Kato; and Shuichi, Ishida, to Nippon Kayaku Co., Ltd. Alkyl phenyl ether derivatives. 3,962,345, Cl. 260-607.00R.

Zablocki, Richard A.: *See—*
Sorensen, Robert; and Zablocki, Richard A., 3,961,464.

Zajacek, John G.: *See—*
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Zakin, Jacques L.: *See—*
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Zalewski, Waclaw P. Method of building construction. 3,961,457, Cl. 52-743.000.

Zanders, Willie M. Educational and recreational game. 3,961,793, Cl. 273-124.00R.

Zanini, Giovanni: *See—*
Brusa, Bruno; Panozzo, Camillo; and Zanini, Giovanni, 3,961,890.

Zannucci, Joseph S.; and Lappin, Gerald R., to Eastman Kodak Company. Titanium dioxide pigmented cellulosic polymer compositions with improved visible and ultraviolet light stability. 3,961,975, Cl. 106-176.000.

Zanoni, Carl A., to Zygo Corporation. Apparatus for producing a scanning laser beam of constant linear velocity. 3,961,838, Cl. 350-7.000.

Zarin, Alvin; and Carbin, Francis A., to United States of America, Army. Simplified surface acoustic wave synthesizer. 3,962,652, Cl. 331-1.00R.

Zeigerson, Esther; and Bloch, Moshe Rudolf, to State of Israel, Ministry of Commerce & Industry, The. Novel flame retardants and their production by chlorobromination of wood pulp waste liquors. 3,962,208, Cl. 260-124.00R.

Zellmer, Wayne G.; and McGowan, Marvin E., to United States of America, Navy. Safety mechanism for intervalometers and distributors. 3,961,555, Cl. 89-1.812.

Zenith Radio Corporation: *See*—
Ciciora, Walter S., 3,962,722.
Lehr, David R.; and Pollard, James H., 3,961,707.
Lerner, Martin, 3,962,005.
Ma, John Y., 3,962,643.

Zia Rouhani, S., to Aktiebolaget Atomenergi. Vapor-liquid separator. 3,961,923, Cl. 55-457.000.

Zimmerman, William E., to Westvaco Corporation. Infra-red consistency meter. 3,962,581, Cl. 250-341.000.

Zinnes, Harold; and Sircar, Jagadish C., to Warner-Lambert Company. 2,3,4,5-Tetra hydro-5-oxo-1-benzothiepi N-4-carboxamide 1,1-dioxides. 3,962,261, Cl. 260-294.80C.

Zirlis, Robert S.: *See*—
Chiocchio, Louis R.; and Zirlis, Robert S., 3,962,120.

Zmuda, Edward I.: *See*—
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Zollner, Christine: *See*—
Zollner, Dieter; Zollner, Christine; and Koziol, Konrad, 3,962,068.

Zollner, Dieter; Zollner, Christine; and Koziol, Konrad, to Messrs. C. Conradty. Metal anode for electrochemical processes. 3,962,068, Cl. 204-290.00F.

Zuk, Borys, to RCA Corporation. Threshold detector circuitry, as for PCM repeaters. 3,962,549, Cl. 179-16.0EA.

Zundorf, Dieter: *See*—
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; Zundorf, Dieter; and Horbel, Hugo, 3,962,129.

Zunft, Donald V.; Weidmann, Siegfried; and Trendel, Dennis J., to Allen-Bradley Company. Power pole module for contactor. 3,962,658, Cl. 335-133.000.

Zurla, Nick, to Beatrice Foods Company. Lamp with protective housing or junction box for spliced electrical conducting wires. 3,962,574, Cl. 240-81.0BS.

Zwahlen, Guenther, to Sublistatic Holding SA. Dyestuff preparations and printing inks. 3,961,965, Cl. 106-22.000.

Zygo Corporation: *See*—
Zanoni, Carl A., 3,961,838.

Zygraich, Nathan; and Huygelen, Constant, to Recherche et Industrie Therapeutiques (R.I.T.). Live brovine adenovirus vaccines, preparation thereof and method of vaccination using them. 3,962,424, Cl. 424-89.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF JUNE, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Allgower, Martin; Perren, Stefan; and Russenberger, Max E., to Synthes A.G. Osteosynthetic pressure plate construction. Re. 28,841, Cl. 128-92.00D.

Butterfield, Ted Lee, to Spraying Systems Co. Unloader valve for spray guns. Re. 28,842, Cl. 137-470.000.

Buzano, Michel, to Rhone-Poulenc-Textile, S.A. Textured polyethylene terephthalate yarns. Re. 28,843, Cl. 57-140.00J.

Clay, Robert B.; Cook, Melvin A.; and Udy, Lex L., to Ireco Chemicals. Blasting slurry compositions containing calcium nitrate and method of preparation. Re. 28,848, Cl. 149-2.000.

Cook, Melvin A.: *See*—
Clay, Robert B.; Cook, Melvin A.; and Udy, Lex L., Re. 28,848.

Dehar, David C., to Ford Motor Company. Valve assembly. Re. 28,844, Cl. 251-144.000.

Ford Motor Company: *See*—
Dehar, David C., Re. 28,844.

General Electric Company: *See*—
Milkovic, Miran, Re. 28,851.

Hamel, Harvey C.; Kunzinger, Charles A.; and Stelzenmuller, William K., to International Business Machines Corporation. Superconductive shift register utilizing Josephson tunnelling devices. Re. 28,853, Cl. 340-173.100.

Honeywell Inc.: *See*—
Vizenor, Richard P., Re. 28,847.

International Business Machines Corporation: *See*—
Hamel, Harvey C.; Kunzinger, Charles A.; and Stelzenmuller, William K., Re. 28,853.

Ireco Chemicals: *See*—
Clay, Robert B.; Cook, Melvin A.; and Udy, Lex L., Re. 28,848.

Itai, Reiichi; and Kanai, Hideo, to Japan Carlit Co., Ltd., The. Surface preparation process for recoating of used coated metallic electrodes. Re. 28,849, Cl. 204-146.000.

Japan Carlit Co., Ltd., The: *See*—
Itai, Reiichi; and Kanai, Hideo, Re. 28,849.

Kanai, Hideo: *See*—
Itai, Reiichi; and Kanai, Hideo, Re. 28,849.

Kawasaki, Akihiro; and Maruyama, Isao, to Maruzen Petrochemical Co., Ltd. Process for preparing alternating copolymer of butadiene and α-olefine and novel alternating copolymer of butadiene and α-olefine containing cis-configuration butadiene unit. Re. 28,850, Cl. 526-98.000.

Kunzinger, Charles A.: *See*—
Hamel, Harvey C.; Kunzinger, Charles A.; and Stelzenmuller, William K., Re. 28,853.

Maruyama, Isao: *See*—
Kawasaki, Akihiro; and Maruyama, Isao, Re. 28,850.

Maruzen Petrochemical Co., Ltd.: *See*—
Kawasaki, Akihiro; and Maruyama, Isao, Re. 28,850.

Milkovic, Miran, to General Electric Company. Current transformer with active load termination. Re. 28,851, Cl. 323-6.000.

Overs, Ronald R. Marine speedometer. Re. 28,839, Cl. 73-187.000.

Perren, Stefan: *See*—
Allgower, Martin; Perren, Stefan; and Russenberger, Max E., Re. 28,841.

Ratchford, Harry L. Hand and finger exerciser. Re. 28,845, Cl. 272-68.000.

Rhone-Poulenc-Textile, S.A.: *See*—
Buzano, Michel, Re. 28,843.

Rockaway Corporation: *See*—
Wait, Hershey L., Re. 28,846.

Rockwell International Corporation: *See*—
Sarring, Ernest J., Re. 28,840.

Russenberger, Max E.: *See*—
Allgower, Martin; Perren, Stefan; and Russenberger, Max E., Re. 28,841.

Sarring, Ernest J., to Rockwell International Corporation. Feed, transport and delivery mechanism for book trimmers and the like. Re. 28,840, Cl. 83-63.000.

Signode Corporation: *See*—
von Heitlinger, Eugene, Re. 28,838.

Spraying Systems Co.: *See*—
Butterfield, Ted Lee, Re. 28,842.

Sproul, Fred C., Sr. Traffic signal with directional indicator. Re. 28,852, Cl. 340-107.000.

Stelzenmuller, William K.: *See*—
Hamel, Harvey C.; Kunzinger, Charles A.; and Stelzenmuller, William K., Re. 28,853.

Synthes A.G.: *See*—
Allgower, Martin; Perren, Stefan; and Russenberger, Max E., Re. 28,841.

Udy, Lex L.: *See*—
Clay, Robert B.; Cook, Melvin A.; and Udy, Lex L., Re. 28,848.

Vizenor, Richard P., to Honeywell Inc. Inside helmet sight display apparatus. Re. 28,847, Cl. 350-302.000.

von Heitlinger, Eugene, to Signode Corporation. Wheel rim strip assembly. Re. 28,838, Cl. 29-33.500.

Wait, Hershey L., to Rockaway Corporation. Collapsible pallet box. Re. 28,846, Cl. 217-16.000.

LIST OF PLANT PATENTEES

Byrum, Roy L., to Joseph H. Hill Co. Rose plant seedling 69–23R. 3,902, 6–8–76, Cl. 28.

Duffett, William E.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,903.

Hill, Joseph H., Co.: *See*—
Byrum, Roy L. 3,902.

Hines, James W., Jr., to Hines Wholesale Nurseries. Azalea plant. 3,901, 6–8–76, Cl. 56.

Hines Wholesale Nurseries: *See*—
Hines, James W., Jr. 3,901.

Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,903, 6–8–76, Cl. 74.

Mikkelsens, Inc.: *See*—
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Mikkelsen, James C. 3,905.

Mikkelsen, James C., to Mikkelsens, Inc. Begonia plant. 3,904, 6–8–76, Cl. 68.

Mikkelsen, James C., to Mikkelsens, Inc. Begonia plant. 3,905, 6–8–76, Cl. 68.

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Jessel, Walter H., Jr., and Duffett. 3,903.

LIST OF DESIGN PATENTEES

AMP, Inc.: *See*—
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A/S Dansk Metal & Armaturindustri: *See*—
Johansen, Frede. 240,178.

AVTEC Industries, Inc.: *See*—
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Ajax Hardware Corp.: *See*—
Read, George D., Glen, and Scott. 240,191.

Allen, Lillie C. Invalid's walker. 240,214, 6–8–76, Cl. D12—130.

Allibert Exploitation societe anonyme: *See*—
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Vrignaud, Guy. 240,258.

American Sterilizer Co.: *See*—
Pairle, James H. 240,273.

Aragona, Louis. Golf putter. 240,245, 6–8–76, Cl. D34—5.

Avolio, Donald R., to Xerox Corp. Toner particle storage container. 240,201, 6–8–76, Cl. D9—216.

Baker, Roy L. Gun holster. 240,225, 6–8–76, Cl. D22—13.

Baldwin, D. H., Co.: *See*—
White, Winsor D., Jr., and Barket. 240,267.

Balmer, James G., Jr., to Xerox Corp. Microfilm reel. 240,192, 6–8–76. Cl. D8—220.
Barket, Dennis: *See*—
White, Winsor D., Jr., and Barket. 240,267.
Bausch & Lomb Inc.: *See*—
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Beckwith, Robert E., Jr., to R & W Associates, Inc. Motorcycle trailer. 240,213, 6–8–76, Cl. D12—102.
Boldt, Melvin H., and T. H. Morrison, to Canteen Corp. Merchandise Mart. Liquid refreshment dispensing cabinet. 240,279, 6–8–76. Cl. D94—3.
Bornes & Ballses: *See*—
Paret, Pierre. 240,206.
Boumann, Paul L., and H. R. Beaven, to Rockwell International Corp. Printer hammer. 240,271, 6–8–76, Cl. D64—11.
Brunswick Corp.: *See*—
Woodfill, William L., and Miller. 240,275.
Buckingham, Mark J. Zodiacal watch face. 240,210, 6–8–76. Cl. D10—124.
Bulova Watch Co., Inc.: *See*—
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Bunnell, Edward D., to AMP, Inc. Telephone outlet receptacle. 240,232, 6–8–76 Cl. D26—1.
Bunnell, Edward D., to AMP, Inc. Telephone outlet receptacle. 240,233, 6–8–76. Cl. D26—1.
Bunnell, Edward D., to AMP, Inc. Combined telephone and electrical outlet receptacle. 240,234, 6–8–76. Cl. D26—1.
Bunnell, Edward D., to AMP, Inc. Telephone outlet receptacle. 240,235, 6–8–76. Cl. D26—1.
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Boldt, Melvin H., and Morrison. 240,279.
Carter, Terrance M.: *See*—
Schneider, Irwin H., and Carter. 240,224.
Cartmell, James V., and E. C. Beck, to NDM Corp. Medical electrode. 240,276, 6–8–76, Cl. D8—1.
Cascade Pacific Lumber Co., Inc.: *See*—
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Clemmons, Thomas E., Sr. Tennis target. 240,244, 6–8–76, Cl. D34—5.
Cleveland, Ivan D. Envelope opener. 240,190, 6–8–76, Cl. D8—103.
Cohen, William J., to Citc Industries. Sport shoe. 240,170, 6–8–76, Cl. D2—310.
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Crawford, Bobby D. Plant stand. 240,253, 6–8–76, Cl. D35—3.
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Dalgaard-Hansen, Benny-Loy. Combined lamp and plant stand or similar article. 240,262, 6–8–76, Cl. D48—31.
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Dorsen, Victor, to Shell Oil Co. Container for use in disseminating deodorant, re-odorant, air-freshening or insecticidal vapors. 240,230, 6–8–76, Cl. D23—150.
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Fortune, William S. Portable desoldering tool or the like. 240,189, 6–8–76. Cl. D8—51.
Foster, Harold H. Oar rest. 240,194, 6–8–76, Cl. D8—232.
Fox, Lowell H., to Roppe Rubber Corp. Mud flap for trucks. 240,215, 6–8–76, Cl. D12—185.
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Huckenbeck, Claus O., to Bausch & Lomb Inc. Zoom or focus control knob for binocular. 240,268, 6–8–76, Cl. D16—59.
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Johansen, Frede, to A/S Dansk Metal & Armaturindustri. Wall support for hand shower or similar article. 240,178, 6–8–76. Cl. D6—86.
Johansson, Nils V. Combined binocular and compass. 240,269, 6–8–76. Cl. D16—59.
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Kaimeier, Wilhelm. Baking pan having releaseable handles. 240,187, 6–8–76. Cl. D7—97.
Kaneko, Isao, Iwao Shiina, and Takashi Kato, to Misawa Homes Institute of Research & Development. Prefabricated bay window unit. 240,219, 6–8–76, Cl. D25—52.
Kato, Takashi: *See*—
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Kawamura, Ken, to Matsushita Electrical Industrial Co. Clock radio. 240,265. 6–8–76. Cl. D56—4.
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328	3,961,661

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61	3,961,665
129	3,961,666

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187	3,961,667

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CLASS 169

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777	3,961,788

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8	3,962,033
27	3,962,035
28N	3,962,034
29	3,962,036
63	3,962,037
68	3,962,038
103.5R	3,962,039
127	3,962,040
	3,962,041
139	3,961,696
143	3,962,042

CLASS 198

25	3,961,697
	3,961,698
26	3,961,699
127R	3,961,700
131	3,961,701
175	3,961,702
188	3,961,704
248	3,961,705

CLASS 200

5R	3,962,556

CLASS 201

2.5	3,962,044
21	3,962,043

CLASS 202

117	3,962,045

CLASS 204

1T	3,962,046
15	3,962,047
28	3,962,048
35N	3,962,049
66	3,962,050
108	3,962,051
129.3	3,962,052
146	Re.28,849
158R	3,962,053
159.12	3,962,054
159.15	3,962,055
	3,962,056
164	3,962,057
180R	3,962,058
181	3,962,059
	3,962,060
	3,962,061
192	3,962,062
206	3,962,063
245	3,962,064
256	3,962,065
279	3,962,066
290F	3,962,068
300R	3,962,069

CLASS 206

44R	3,961,706
419	3,961,707
435	3,961,708
448	3,961,709

CLASS 208

10	3,962,070
58	3,962,071

CLASS 209

140	3,962,072

CLASS 210

7	3,962,073
21	3,962,074
22A	3,962,075
22R	3,962,076
23H	3,962,077
27	3,962,078
47	3,962,079
59	3,962,080
69	3,962,081
71	3,962,082
79	3,962,083
83	3,962,084
131	3,962,085
138	3,962,086
150	3,962,087
170	3,962,088
191	3,962,089
231	3,962,090
232	3,962,091
236	3,962,092
242S	3,962,093
321A	3,962,095
321R	3,962,094
433M	3,962,096
435	3,962,097
532R	3,962,098

CLASS 211

49R	3,961,710
117	3,961,711
325	3,961,675

CLASS 212

5	3,961,712
58R	3,961,713

CLASS 214

41R	3,961,714
84	3,961,715
85	3,961,716
302	3,961,717
520	3,961,718

CLASS 215

13R	3,961,720
277	3,961,719

CLASS 217

16	Re.28,846

CLASS 219

69D	3,962,557
121LM	3,962,558
210	3,962,559
314	3,962,560
391	3,962,561
490	3,962,562

CLASS 220

230	3,961,721
270	3,961,722
331	3,961,723
371	3,961,724

CLASS 222

1	3,961,725
3	3,961,726
103	3,961,727
180	3,961,728
192	3,961,729
231	3,961,730
390	3,961,731

CLASS 223

57	3,961,733

CLASS 224

45T	3,961,734

CLASS 226

168	3,961,735
192	3,961,736
	3,961,737

CLASS 228

5.1	3,961,738
110	3,961,739
144	3,961,741

CLASS 229

17R	3,961,742
62	3,961,743

CLASS 232

16	3,961,744

CLASS 233

1B	3,961,745
20R	3,961,746

CLASS 235

61.9R	3,961,747
92EA	3,962,567
92PE	3,962,565
92SB	3,962,564
92C	3,962,566
92V	3,962,563
132R	3,962,568
151.33	3,962,569
	3,962,570
152	3,962,571
156	3,962,572
	3,962,573
164	3,961,750

CLASS 236

49	3,961,748
101D	3,961,749

CLASS 238

10R	3,961,751

CLASS 239

1	3,961,752
64	3,961,753
289	3,961,754
319	3,961,755
337	3,961,756

CLASS 240

26	3,962,675
81BD	3,962,678
81BS	3,962,574

CLASS 241

28	3,961,757
46.11	3,961,758

CLASS 242

66	3,961,759
67.3R	3,961,760
107.4A	3,961,761
149	3,961,762
199	3,961,763

CLASS 244

155R	3,961,764

CLASS 248

126	3,961,765
210	3,961,766
340	3,962,575
503	3,961,767

CLASS 250

201	3,962,576
208	3,962,577
226	3,962,578
313	3,962,579
340	3,962,580
341	3,962,581
402	3,962,583
468	3,962,584
476	3,962,585
483	3,962,582
484	3,962,586
506	3,962,587
558	3,962,588

CLASS 251

144	Re.28,844
191	3,961,768
305	3,961,769
315	3,961,770

CLASS 252

8.5A	3,962,099
8.55C	3,962,101
	3,962,102
8.8	3,962,100
22	3,962,103
32.7E	3,962,104
56R	3,962,105
99	3,962,106
100	3,962,107
142	3,962,108
146	3,962,109
181	3,962,110
182	3,962,067
	3,962,111
187R	3,962,112
188	3,962,113
301.1W	3,962,114
301.21	3,962,116
301.23	3,962,115
301.4F	3,962,117
301.4R	3,962,118
351	3,962,119
359E	3,962,120
363.5	3,962,121
392	3,962,122
400A	3,962,123
404	3,962,124
408	3,962,125
416	3,962,126
419	3,962,127
421	3,962,128
428	3,962,129
429B	3,962,130
429R	3,962,131
430	3,962,132
433	3,962,133
437	3,962,134
450	3,962,135
454	3,962,136
456	3,962,137
462	3,962,138
463	3,962,139
470	3,962,140
501	3,962,141
503	3,962,142
514	3,962,143
517	3,962,144
519	3,962,145
520	3,962,146
522	3,962,147
	3,962,148
540	3,962,149
542	3,962,150
548	3,962,151
551	3,962,152

CLASS 254

173R	3,961,772
184	3,961,771

CLASS 256

1	3,961,773

CLASS 259

1R	3,961,774
24	3,961,775
192	3,961,776

CLASS 260

2.5HA	3,962,154
2.5R	3,962,153
	3,962,155
5	3,962,156
17.4CL	3,962,158
17.4GC	3,962,159
17.4R	3,962,157
185	3,962,160
22CB	3,962,162
22TN	3,962,161
23XA	3,962,163
28.5B	3,962,164
29.2EP	3,962,165
29.4UA	3,962,167
29.4R	3,962,166
29.6RW	3,962,168
29.6TA	3,962,267
29.6F	3,962,169
29.7H	3,962,170
33.8F	3,962,171
37N	3,962,172
39R	3,962,173
40R	3,962,174
45.7P	3,962,175
45.7R	3,962,176
45.75N	3,962,177
45.75W	3,962,178
45.95G	3,962,179
47CP	3,962,184
47EC	3,962,186
47EN	3,962,182
47ET	3,962,180
	3,962,181
47C	3,962,183
	3,962,185
62	3,962,187
75N	3,962,188
	3,962,191
	3,962,192
75P	3,962,194
75R	3,962,189
	3,962,190
	3,962,193
96R	3,962,206
112.5R	3,962,207
124R	3,962,208
152	3,962,209
192	3,962,210
211.5R	3,962,211
219	3,962,212
239.1	3,962,214
	3,962,215
	3,962,216
239.3R	3,962,255
239.55R	3,962,217
240D	3,962,219
240F	3,962,222
240G	3,962,220
	3,962,221
240R	3,962,218
243C	3,962,223
	3,962,224
	3,962,226
	3,962,227
	3,962,228
	3,962,229
	3,962,230
	3,962,231
243R	3,962,232
	3,962,225
	3,962,233
	3,962,234
244R	3,962,235
	3,962,236
247.1M	3,962,237
247.2B	3,962,238
248AS	3,962,240
248NS	3,962,239
249.5	3,962,241
250AC	3,962,242
253	3,962,243
256.5R	3,962,244
	3,962,245
268CN	3,962,247
268TR	3,962,248
268C	3,962,246
	3,962,249
270D	3,962,250
273	3,962,251
279R	3,962,252
285.5	3,962,253
287CF	3,962,254
293.53	3,962,258
293.58	3,962,259
293.6	3,962,256
293.8	3,962,257
294.8C	3,962,261
	3,962,262
294.8F	3,962,260
294.9	3,962,263
	3,962,264
295E	3,962,265
295T	3,962,266
296D	3,962,268
296R	3,962,269
307FA	3,962,271
307F	3,962,270
308D	3,962,272
	3,962,273
309	3,962,274
310C	3,962,275
326C	3,962,278
326S	3,962,276
	3,962,277
340.2	3,962,279
340.5	3,962,280
	3,962,281
	3,962,282
340.9	3,962,283
347.5	3,962,284
348.5R	3,962,285
	3,962,286
369	3,962,288
395	3,962,289
396N	3,962,290
397.45	3,962,291
403	3,962,292
408	3,962,293
429R	3,962,294
429.7	3,962,295
	3,962,296
439CY	3,962,297
447	3,962,298
448.8R	3,962,299
449.5	3,962,300
453RW	3,962,303
453P	3,962,301
	3,962,302
455A	3,962,304
	3,962,305
456A	3,962,306
465D	3,962,308
465H	3,962,307
465.3	3,962,309
	3,962,310
468D	3,962,312
468L	3,962,311
473S	3,962,313
	3,962,314
475B	3,962,315
479C	3,962,316
482B	3,962,317
502.4P	3,962,318
514J	3,962,319
515R	3,962,320
530N	3,962,322
535P	3,962,287
543P	3,962,323
	3,962,324
544C	3,962,327
544F	3,962,325
544K	3,962,326
551S	3,962,328
553R	3,962,329
559AT	3,962,330
	3,962,331
561N	3,962,332
	3,962,333
570.7	3,962,334
579	3,962,336
583K	3,962,337
584R	3,962,338
586C	3,962,339
	3,962,341
586G	3,962,340
592	3,962,342
599	3,962,343
601R	3,962,344
607A	3,962,346
607R	3,962,345
615A	3,962,349
615F	3,962,348
615R	3,962,347
621G	3,962,350
633	3,962,351
	3,962,352
	3,962,353
638R	3,962,354
649R	3,962,356
651R	3,962,357
653	3,962,358
667	3,962,359
668A	3,962,360
668R	3,962,362
671C	3,962,361
	3,962,364
671M	3,962,363
671P	3,962,365
674A	3,962,366
683.2	3,962,367
835	3,962,368
849	3,962,369
859R	3,962,370
870R	3,962,371
878R	3,962,372
889	3,962,198
900	3,962,373
928	3,962,374
953	3,962,376
	3,962,377
968	3,962,378

CLASS 261

39B	3,962,379

3,962,380
141 3,962,381

CLASS 264

3E 3,962,382
4 3,962,383
7 3,962,384
11 3,962,385
22 3,962,386
45.4 3,962,390
50 3,962,387
51 3,962,388
56 3,962,389
81 3,962,391
89 3,962,392
90 3,962,393
3,962,394
91 3,962,395
98 3,962,396
144 3,962,397
184 3,962,398
261 3,962,399
328 3,962,400

CLASS 266

114 3,961,777
217 3,961,778
225 3,961,779

CLASS 269

64 3,961,780

CLASS 270

20 3,961,781
61R 3,961,782
66 3,961,783

CLASS 271

94 3,961,784
119 3,961,785
122 3,961,786

CLASS 272

68 Re.28,845
93 3,961,787
570 3,961,732

CLASS 273

29BE 3,961,789
67A 3,961,790
86B 3,961,791
95R 3,961,792
124R 3,961,793
132 3,961,794
134AD 3,961,795
167A 3,961,796

CLASS 274

37 3,961,797

CLASS 277

3 3,961,798
9 3,961,799

CLASS 279

58 3,961,800

CLASS 280

94 3,961,804
153R 3,961,808
166 3,961,809
239 3,961,810
289A 3,961,811
478R 3,961,812
485 3,961,813
626 3,961,801
631 3,961,802
642 3,961,803
732 3,961,806
747 3,961,805
3,961,807

CLASS 285

21 3,961,814
93 3,961,815

CLASS 292

148 3,961,816
336.3 3,961,817

CLASS 293

71P 3,961,818

CLASS 294

27R 3,961,819

CLASS 296

97C 3,961,820
146 3,961,821

CLASS 297

423 3,961,822
452 3,961,823

CLASS 299

17 3,961,824
33 3,961,825

CLASS 301

125 3,961,826
132 3,961,827

CLASS 303

21AF 3,961,828

CLASS 307

214 3,962,589
3,962,590
264 3,962,591
297 3,962,592

CLASS 308

28 3,961,829

CLASS 310

46 3,962,593
61 3,962,594
93 3,962,595

CLASS 312

135 3,961,830
200 3,961,831

CLASS 313

117 3,962,596
188 3,962,597
406 3,962,598
449 3,962,599

CLASS 315

158 3,962,600
241R 3,962,601
370 3,962,602
3,962,603
391 3,962,604

CLASS 317

16 3,962,605
18D 3,962,606
31 3,962,607
100 3,962,608
103 3,962,609
108 3,962,610
154 3,962,611

CLASS 318

139 3,962,612
225R 3,962,613
227 3,962,614
305 3,962,615
400 3,962,616
444 3,962,617
561 3,962,618
571 3,962,619
590 3,962,620

CLASS 320

15 3,962,621

CLASS 321

8R 3,962,622
27R 3,962,623
3,962,624
3,962,625
45R 3,962,626

CLASS 323

6 Re.28,851

CLASS 324

34R 3,962,627
43G 3,962,628
51 3,962,630
57R 3,962,629
119 3,962,631
137 3,962,632
150 3,962,633

CLASS 325

6 3,962,634
13 3,962,635
38B 3,962,636
42 3,962,637
45 3,962,638
59 3,962,639
421 3,962,640
455 3,962,641
3,962,642
464 3,962,643
470 3,962,644
478 3,962,645
3,962,646

CLASS 328

59 3,962,647
142 3,962,648

CLASS 329

103 3,962,649

CLASS 330

29 3,962,650
51 3,962,651

CLASS 331

IR 3,962,652
2 3,962,653
56 3,962,654
94.5PE 3,962,656
94.5H 3,962,655

CLASS 332

7.51 3,962,657

CLASS 335

133 3,962,658
196 3,962,659

CLASS 336

65 3,962,660
84 3,962,661
90 3,962,662
129 3,962,663

CLASS 337

86 3,962,664
102 3,962,665
159 3,962,666
202 3,962,667
228 3,962,668

CLASS 338

19 3,962,669
334 3,962,670

CLASS 339

29B 3,961,832
119R 3,961,833
176M 3,961,834
260 3,961,835

CLASS 340

5C 3,962,671
6R 3,962,672
15 3,962,673
15.5AC 3,962,674
41R 3,962,676
52E 3,962,677
107 Re.28,852
146.2 3,962,680
146.3SY 3,962,679
146.3H 3,962,681
172.5 3,962,682
3,962,683
3,962,684
3,962,685
3,962,706
173LM 3,962,688
173R 3,962,686
3,962,687
3,962,689
173.1 Re.28,853
174ZB 3,962,690
183 3,962,697
203 3,962,691
228R 3,962,692
261 3,962,693
267R 3,962,694
274R 3,962,695
276 3,962,696
286 3,962,698
323B 3,962,699
324M 3,962,700
336 3,962,701
380 3,962,702

CLASS 343

7.3 3,962,703
7.7 3,962,704
16M 3,962,705

CLASS 350

3.5 3,961,836
3,961,837
7 3,961,838
117 3,961,839
160LC 3,961,840
3,961,843
160R 3,961,841
3,961,842
175FS 3,961,844
184 3,961,845
302 Re.28,847

CLASS 353

27R 3,961,846

CLASS 354

44 3,962,707
51 3,962,708
3,962,709
225 3,962,710
295 3,962,711
319 3,962,712

CLASS 355

4 3,961,847
3,961,848
11 3,961,849
77 3,961,850

CLASS 356

1 3,961,851

CLASS 357

2 3,962,715
14 3,962,713
18 3,962,716
19 3,962,714
44 3,962,717
48 3,962,718
74 3,962,719

CLASS 358

4 3,962,720
3,962,721
10 3,962,722
27 3,962,723

CLASS 360

31 3,962,724
36 3,962,725
51 3,962,726
85 3,962,727

CLASS 401

195 3,961,852

CLASS 403

12 3,961,853
59 3,961,854
329 3,961,855

CLASS 404

133 3,961,856

CLASS 408

83 3,961,857
204 3,961,858

CLASS 415

18 3,961,859

CLASS 417

44 3,961,860
265 3,961,861
282 3,961,862
334 3,961,863
354 3,961,864
362 3,961,865
379 3,961,866
407 3,961,867
550 3,961,868
555R 3,961,869

CLASS 418

73 3,961,870
121 3,961,871
132 3,961,872

CLASS 423

10 3,962,401
35 3,962,402
206R 3,962,403
222 3,962,404
242 3,962,405
345 3,962,406
464 3,962,407
498 3,962,408
571 3,962,409
574R 3,962,410
651 3,962,411

CLASS 424

1 3,962,412
8 3,962,413
19 3,962,414
3,962,415
3,962,416
52 3,962,417
70 3,962,418
78 3,962,419
81 3,962,420
89 3,962,421
3,962,422
3,962,423
3,962,424
94 3,962,425
116 3,962,426
118 3,962,427
174 3,962,428
181 3,962,429
185 3,962,430
200 3,962,431
204 3,962,432
212 3,962,433
226 3,962,434
227 3,962,435
233 3,962,436
246 3,962,437
247 3,962,438
248 3,962,439
250 3,962,440
3,962,441
251 3,962,442
3,962,443
3,962,444
258 3,962,445
260 3,962,446
263 3,962,447
3,962,448
267 3,962,449
3,962,450
3,962,451
272 3,962,452
273 3,962,453
3,962,454
274 3,962,471
285 3,962,455
298 3,962,456
300 3,962,457
304 3,962,458
331 3,962,459
342 3,962,460
352 3,962,461

CLASS 425

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D2—	310	240,170		51	240,189		114	240,207		150	240,230		5GC	240,249		31	240,259
	361	240,171		103	240,190		116	240,208		156	240,231		GH	240,245			240,260
D4—	4	240,172		167	240,191		124	240,210	D25—	1	240,217			240,247			240,261
D6—	7	240,173		220	240,192	D11—	1R	240,211		35	240,216		HP	240,243			240,262
	20	240,174		232	240,194	D12—	53	240,212		52	240,219		PP	240,244	D54—	4	240,263
	29	240,175		249	240,193		102	240,213		74	240,221			240,248	D55—	1D	240,264
	63	240,176			240,195		130	240,214		80	240,274		J	240,246	D56—	4B	240,265
	64	240,177			240,196		185	240,215	D26—	1B	240,232		15AJ	240,250			240,270
	86	240,178			240,197	D16—	59	240,268			240,233		LL	240,252		R	240,266
	99	240,179		263	240,198			240,269			240,234		D	240,251		9	240,267
	137	240,180	D9—	185	240,199	D19—	6	240,222			240,235		45	240,218	D64—	11R	240,271
		240,181		187	240,200		73	240,223			240,236			240,220	D65—	1	240,272
		240,182		216	240,201		76	240,224	D29—	23A	240,237	D35—	3C	240,253	D67—	3	240,273
	146	240,183		233	240,202	D22—	13	240,225	D30—	1	240,238	D45—	16A	240,254	D77—	1	240,275
	161	240,184		236	240,203		14	240,226	D32—	A	240,239		19G	240,255	D83—	F	240,276
	176	240,185			240,204	D23—	19	240,227	D34—	2R	240,240		L	240,256		12R	240,277
	177	240,186		246	240,205		49	240,228			240,241		S	240,257			240,278
D7—	97	240,187	D10—	101	240,206		69	240,229			240,242	D48—	20F	240,258	D94—	3A	240,279
D8—	18	240,188		109	240,209												

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Design Patents

5	240,225		240,243		240,266		240,240		240,204		240,250
6	240,183	9	240,217		240,267		240,241		240,209		240,254
	240,189		240,223		240,279		240,242		240,212		240,256
	240,191		240,255	18	240,213		240,245		240,239		240,257
	240,193	12	240,194		240,231		240,248	37	240,177	48	240,218
	240,195		240,232		240,237		240,252		240,244		240,220
	240,196		240,233	22	240,221	36	240,180	39	240,174	53	240,190
	240,197		240,234	24	240,210		240,181		240,214		240,205
	240,226		240,235		240,253		240,182		240,215		240,208
	240,227		240,236	25	240,170		240,185		240,247		240,259
	240,249		240,274		240,224		240,186		240,264		240,260
	240,251		240,277	26	240,192		240,188		240,276		240,261
	240,268		240,278	34	240,176		240,201	42	240,173	55	240,172
	240,271	17	240,198		240,199		240,202		240,273		240,211
	240,272		240,228		240,222		240,203	44	240,171		240,275
8	240,184		240,229								

Plant Patents

6	3,901	18	3,902	39	3,903		3,904		3,905

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U.S. DEPARTMENT OF COMMERCE

Elliot L. Richardson, Secretary

PATENT AND TRADEMARK OFFICE

C. Marshall Dann, Commissioner